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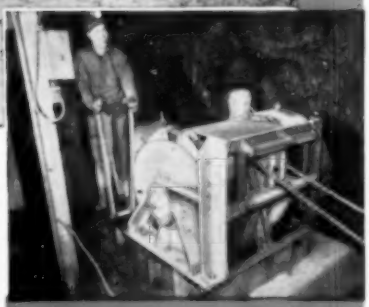

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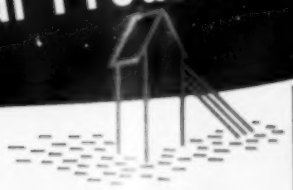

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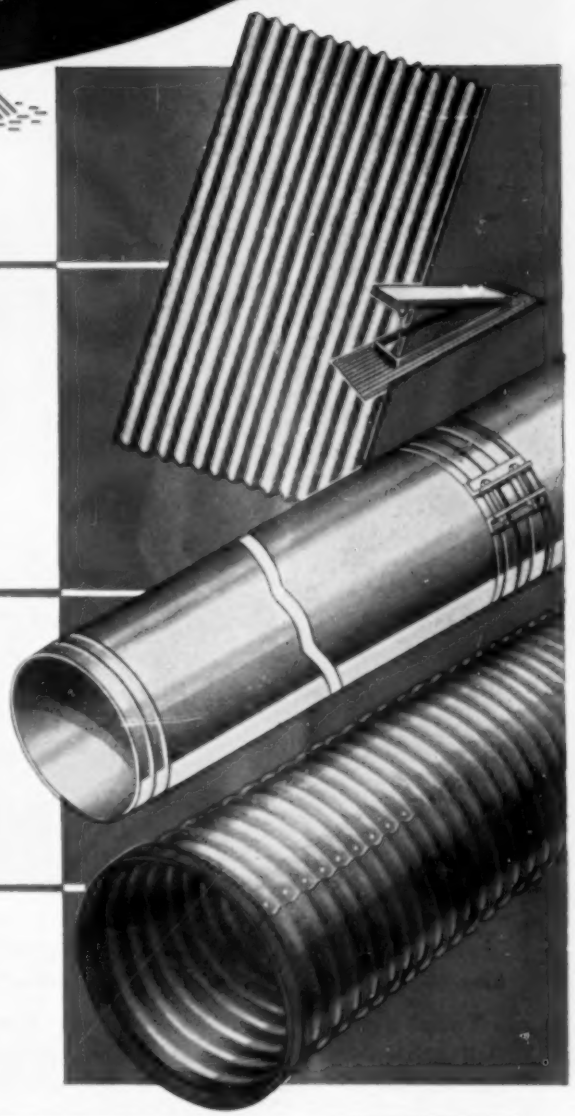

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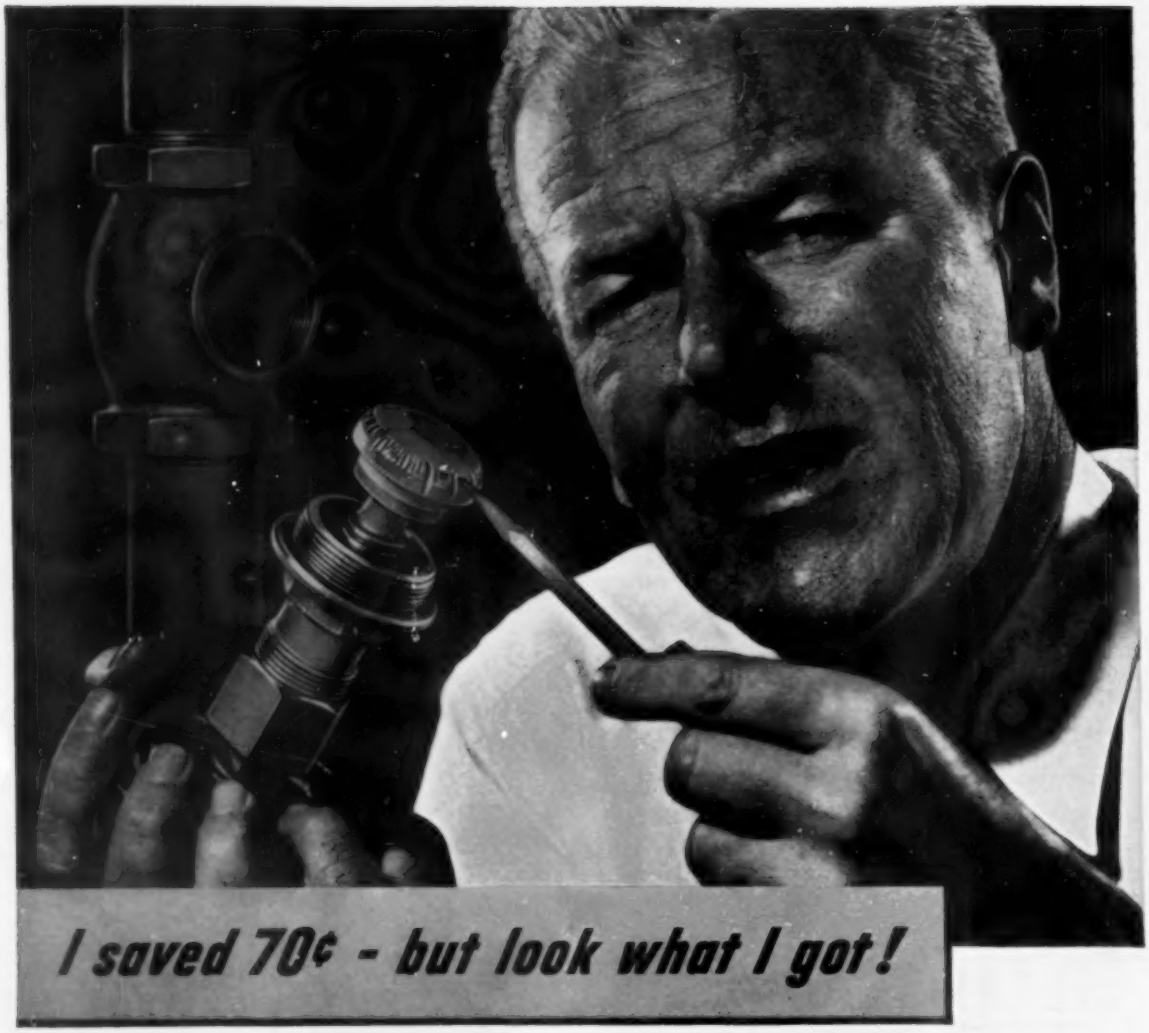

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On the cover

RAILWAY PIONEERING 1954—A big, powerful bulldozer clears a swath through rugged mountainous British Columbia country for the Canadian National Railways new 43-mile Terrace-Kitimat line. The railway will serve the more than $500,000,000 Aluminum Company of Canada plant at Kitimat.

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BRITISH COLUMBIA

Holding Its Ground

★ BY GEORGE C. CROSS

Declines in Zinc and Iron Offset by Gains in Lead, Silver and Asbestos

MINING held its ground in British Columbia in 1954 from the standpoint of overall value of production. Declines in value of zinc and iron ore produced were offset by increases in value of the output of lead, silver, asbestos and other industrial minerals. There was a slight rise in value of copper produced and a slight decline in value of tungsten shippd out of the province. Coal production continued to decline, but there was a gain in structural minerals, in each case measured by value.

These conclusions are based on the preliminary estimates of the B.C. government's Bureau of Economics and Statistics, which usually prove to be conservative when the final figures become available.

Casualties were not as numerous as in 1953 when lead-zinc mines had to adjust to the lower scale of metal prices or suspend operations. In 1954, there was relative stability in lead and zinc prices and there was an appreciable recovery in the earnings of the province's largest lead-zinc operation, the Kimberley and Trail operations of Consolidated Mining & Smelting Co. Ltd., as evidenced by payment of dividends from 1954 earnings one-eighth higher than the total paid from earnings of the preceding year. Mines with values chiefly in zinc remained closed, but those with a substantial lead content and more especially those producing silver or silver and lead, in quantity, turned in good profit results.

Neck and Neck Race

At the year end the Canadian Exploration Ltd. lead zinc mine at Salmo was in a neck-and-neck race with the Giant Mascot Mines Ltd. lead mine at Spillimacheen for the position of second largest lead producing mine in the west coast province. Diversity of opportunity in the industry is evidenced by Canadian Exploration's large profits from tungsten mined on the same Salmo property and by side lines being developed by Giant Mascot, which include installation of a zinc circuit to recover a small proportion of that metal in the more remunerative form of zinc concentrates, and current preparations for the shipment of barite for sale to Alberta's oil industry as a constituent of drilling muds.

Silver-Standard Mines' silver-gold-lead-zinc-cadmium operation piled up substantial earnings, making possible the building of $600,000 working capital at the year end after dividends. The strong cash position made practical a temporary mill shutdown late in December while all work was concentrated on making available what the management regards as a 50-50 chance of opening a new mine, virtually a duplicate of the earlier one but on the other side of a major fault.

Yale Lead & Zinc Mines Ltd. found 1954 to be its "year of decision". Low level development was so successful in adding to proven and indicated tonnage that the company went ahead with the doubling of its mill capacity. The enlarged capacity will shortly be brought into play. Yale, at Ainsworth, B.C., is regarded as one of the most likely dividend starters in 1955.

Impressive Headway

Sunshine Lardeau Mines Ltd. made impressive headway, making possible increased attention to exploration and ore development in 1955 while at the same time steadily reducing its debt liability to Berens River Mines Ltd.

High grade silver lead lodes at the properties of Violamac Mines Ltd. in the Slocan put this operation in the category of one of the more profitable small mines in the province.

Silver is the main product at Torbrit Silver Mine on the north coast and at Highland-Bell in the south central region. Torbrit, controlled and managed by Mining Corporation of Canada Ltd., completed paying its indebtedness to the parent company and initiated dividends. Highland Bell suspended dividends while allocating a portion

This aerial view shows Kemano, B.C., site of one of the largest generating plants ever built. It will supply 2,240,000 horsepower for the vast, new aluminum smelter at Kitimat. The Canadian National Railways has built a new 43-mile line from Terrance to Kitimat to transport the plant's 91,500-ton annual aluminum production. — Canadian National Railways Photo

of its substantial working capital for a "long-shot" exploration project which, if successful, could be one of the 1955 highlights in B.C. mining among the smaller properties with excellent past production and dividend records.

In copper mining, the Britannia and Granby operations between them are credited with aggregate production worth close to $15,000,000, a moderate rise from $14,860,544 reported for 1953. Britannia continues to give chief exploration attention to its very extensive claims between the half-century old Britannia mine and North Vancouver. When the whole story is disclosed by Howe Sound Company, the controlling concern, the chances for another half century of profitable lifetime for this phenomenal operation can be better appraised.

Two Noteworthy Achievements

Granby, with Newmont as a partner, put its main exploration effort on the Granduc Mines project. The 1954 results, besides confirming that Granduc, given solution of the transportation problem, is potentially one of Canada's great copper mines, have accomplished two noteworthy achievements for Canada's mountainous province:

1. Granduc has demonstrated that aircraft can be the primary instrument both in discovery of ore deposits and in servicing exploration crews for tunnelling and diamond drilling under conditions virtually prohibitive for any other means of transport.

2. Granduc provides one more convincing argument, if any were needed, for development of hydro-electric resources, establishment of metallurgical industries and provision of access roads to the mineralized districts of northwestern B.C.

Provincial planning calls for a road which will link the existing road from the Alaska Highway which extends southward as far as the Cassiar Asbestos operation at McDame, 100 miles south of the Yukon border, to the coast with southwestern terminus likely at Stewart, 25 miles from Granduc.

With regard to hydro-electric and metallurgical projects for this region, the B.C. government on August 2, 1954, approved the application by Northwest Power Industries Ltd., an offshoot of the Frobisher - Ventures group of companies, to develop water power resources in the Atlin area. These interests plan a tremendous capital investment to establish electro-metallurgical plants, utilizing water storage available there and in nearby Yukon Territory. In making known it had given the go-ahead for this project, which has a potential larger than the hydro development of Aluminum Co. of Canada at Kitimat, 400 miles to the south, the B.C. government foreshadowed favorable developments in mining in the north half of the province as well as the smelting and refining of metals from imported areas.

Could be Economically Workable

The view taken by the government's mining technicians is that with low cost hydro power known, presently submarginal occurrences of base metals could become economically workable and exploration for others stimulated.

The Frobisher-Ventures project envisages production of pig iron, which conceivably involves utilization of iron ore deposits in the Quatsino and Zeballos areas of Vancouver Island, at Ecstall River in the Kitimat area, or at Zymoetz River in the Terrace area. Iron ore deposits now being mined for export will not likely be affected by the new venture, it was stated.

Although on a smaller scale than Granduc, other copper exploration undertakings in B.C. showed not a little promise in 1954. Cowichan Copper Mines Ltd. at Cowichan Lake, southern Vancouver Island, although still developing only the first two of some thirty anomalies, has delimited a substantial tonnage grading 10 per cent

BRITISH COLUMBIA
1955

LOOKING FORWARD

to increased activity in the search for

----------OIL

stimulated by the prospect of

Natural Gas Distribution

from the rich

Peace River Area

DEPARTMENT OF MINES

JOHN F. WALKER, Deputy Minister PARLIAMENT BLDGS., VICTORIA, B.C. HON. R. E. SOMMERS, Minister

copper and is planning underground and surface exploration at a much greater rate in 1955.

Financed from Toronto and under new direction, Rico Copper, 100 miles east of Vancouver, is in the early stages of exploring high grade copper occurences. Intermittent, this operation is persistent and may also reach a conclusive stage in 1954. The intermittent factor is due entirely to the fact that at the present stage, all servicing is by helicopter to a tunnel portal 6,000 feet above sea level. Here again, is an example of the progress in B.C. mine exploration in mountainous terrain made possible by modern aircraft.

After two season's work Noranda Mines Ltd. thinks enough of the possibilities of Yreka Copper in the Quatsino area of Vancouver Island to proceed to company formation.

Other copper prospects on the coast and in various parts of the interior are receiving attention, this effort being stimulated by the firm to higher market price indicated for the red metal.

Gold Mining Still Limited

Gold mining in B.C. continued to be limited for the most part to the long-profitable Bralorne and Pioneer mines in the Bridge River area, Cariboo Gold Quartz in the Cariboo, and Kelowna Mines Hedley Ltd., at Hedley. With the possible exception of the Hedley operation, all achieved enough encouragement in 1954, to continue adding to proven ore reserves in anticipation of eventual better conditions for the industry from a profit making standpoint. Pioneer raised its dividend slightly, this being the only dividend paying gold mine at present in the province which, historically, owes a great deal to this phase of the mining industry.

The less favorable gold mining assistance proposal at Ottawa for 1955 and 1956, came as a body blow to an industry which has been putting forth near-herculean efforts to make a worthwhile come-back. Depth developments at Bralorne and Pioneer during 1954 proved very satisfactory and long range lateral programs now under way are regarded as holding much promise of long life for these mines, giving a reasonable break on costs and the return on gold. Cariboo Gold Quartz has overcome seemingly unsurmountable problems and is likewise headed into what appears a good earnings position. The cost-aid reduction proposal come as another of the long series of discouragements which have beset the industry since the early years of World War II.

In the Atlin district the deep lead placer gold mining operation of Noland Mines Ltd., managed by Transcontinental Resources Ltd., made a good production and profit showing in 1954. Plans for a broadening of the exploration phase of this project have been formulated.

A gold-silver exploration program by Deer Horn Mines Ltd., in the Kitimat-Tweedsmuir Park region, was well advanced by the year end and could be a feature of 1955 developments.

Cassiar Starts 500-ton Mill

Cassiar Asbestos Corporation started its 500-ton mill July 6, and in the first three months realized net profit of $513,622. Installation of a tramline in the summer of 1955 is expected to extend the mining season at this operation which has estimated reserves of seven million tons at the main deposit and a substantial additional deposit in what is known as the Cirque Valley nearby. The product from this far north mine has been sold well in advance of production. Total mine output of fibre in the 1954 season was 140,552 tons.

Canadian Exploration Ltd. at Salmo operated its tungsten mill to confirm its position as Canada's leading producer of the metal. Maximum permissible deliveries under the company's sales contract continued through the year. Operating rate was increased from 10,000 to about 12,000 tons per month.

The Red Rose tungsten mine of Western Tungsten Copper Mines Ltd. was closed in December due to strict interpretation of the terms of the contract for sale of the product.

Arrangements were well advanced at the year end for the marketing of British Columbia natural gas on a large scale.

This mineral product, if present plans of Westcoast Transmission Co. Ltd. mature, will be a major contributor to B.C.'s mineral output, starting in 1957.

Significant Oil Strikes

Pacific Petroleums Ltd. announced in January that in approximately four years, Pacific and its associates had drilled nearly 100 wells and had been directly responsible for the proving up of more than three trillion cubic feet of natural gas in British Columbia. Significant oil strikes had also been made while this large program was carried out. Cost of wells varies as to conditions in each region but averages about $150,000 per well. This program has all been carried out since 1951, when Pacific made its first important discovery at Fort St. John No. 1 well. Between that month and the end of 1954, the Pacific statement said that Pacific and other major companies had spent approximately $30,000,000 on the exploration program. The rate of expenditure in B.C. is increasing rapidly and the pipeline project, awaiting only F.P.C. approval to be financed, will put this industry on a permanent footing.

The B.C. government will receive a royalty of 15 per cent on natural gas at well-head. If oil is produced, in addition to a royalty, the government will reserve one-half of the land and detain it for sale to the highest bidder.

Late in 1954, Imperial Oil arranged to spend $9,000,000 on development to earn interests in up to 2,500,000 acres controlled in the B.C. Peace River area by Pacific, Sunray and associates. Initial well under this agreement was underway in January 1955.

Value of Production

VALUE of mineral production in British Columbia for the year 1954 is estimated at $149,000,000 in a release by Hon. R. E. Sommers, minister of mines. This compares with a final figure of $152,731,181 for 1953.

The estimated 1954 values for the major items and for groups of minor items with 1953 figures in brackets are:

Placer gold, $250,000 ($403,230); Lodge gold, $8,750,000 ($8,727,-294).

Silver, $8,800,000 ($7,017,709).

Copper, $14,900,000 ($14,869,544).

Lead, $45,550,000 ($39,338,655).

Zinc, $31,200,000 ($40,388,346).

Iron, $3,450,000 ($6,763,105).

Tungsten, $5,600,000 ($5,950,323).

Other metals, $2,500,000 ($2,875,-412).

Industrial minerals (include asbestos, gypsum, sulphur and others), $5.500,-000 ($3,211,748).

Structural materials (include clay products, lime, limestone and cement, rock and building stone, sand and gravel), $13,700,000 ($13,555,038).

Coal, $9,200,000 ($9,630,777).

The prices used in valuing the principal metals (1953 prices in brackets) are: Gold, fine oz., $34.07 ($34.42); Silver, fine oz., 82.98c (83.77c); Copper, lb., 29.95c (30.33c); Lead, lb., 13.68c (13.26c); Zinc, lb. 10.40c (10.67c).

United States prices for copper, lead and zinc rose moderately during 1954, and the United States price for silver remained constant. The discount on United States funds in Canada averaged approximately 2.6 per cent in 1954 compared with 1.6 per cent in 1953. Consequently the 1954 prices received by British Columbia producers of most metals were about 1 per cent less than in 1953.

N. W. TERRITORIES

Continued Progress

Production is Increasing and Employment Growing

★ **By G. H. Finland, Manager, Alberta and Northwest Chamber of Mines.**

A SUCCESSFUL year in mining was recorded in the mining news of the year. Extremely interesting headlines were frequent occurrences during 1954. These headlines told us that major developments were shaping up at Giant Yellowknife Gold Mines and that higher sights were suggested for Gunnar mines, also an impressive new ore body was being developed at Cassiar Asbestos and they were finding exceptional ore at Consolidated Discovery. Pine Point was a major base metal development and a record output was certain for producing mines of Canada. These headlines make good news and add up to a very successful year in the mining industry, not only for Canada as a whole, but also for Northwestern Canada in which we in the West are particularly interested. The industry is on a sound basis with huge reserve of ore of many products. Production is increasing and employment is growing.

The news of the year also indicated the trend in prospecting methods and of the ever widening areas that are being prospected. Geiger counters and scintillometers have become standard prospecting equipment. The airborne scintillometers are now in general use. Helicopters have been added to the transportation field to take the prospector and the engineer to hitherto inaccessible places and, like the aeroplane, are reducing the time and effort previously consumed in travel.

The river is the life stream of all mining activities in Alberta. The above picture, for which we are indebted to the Alberta and Northwest Chamber of Mines, shows a barge load of freight starting down river at Waterways to the mining operations.

Exploring New Fields

Out beyond the known areas the prospector is penetrating new fields and men of the geological survey are mapping these far off places to encourage the increasing search for metals.

The prospecting fraternity continues to form the advance guard of the mining industry and their efforts continue to pay off in many new finds. New uranium finds are reported in the Marion River area north of Yellowknife and in the Yukon silver, lead and asbestos discoveries are reported. Development operations during 1954 have shown a good score in mine-making possibilities. In the Uranium City area five mines were shipping or preparing to ship ore to the Eldorado mill. Production at Pine Point only awaits better metal prices. The gold mines of Yellowknife continue to develop richer and larger ore reserves. In the Yukon area United Keno Hill and Cassier both report stepped up production.

Greater markets are waiting for the prospector to find new deposits and for the miner to produce ever more and ever newer metals. 1954 has been a year marked with startling headlines that proclaim progress and achievement. This is not a boom but sound industrial development that is financed by Canada's leading business men, as well as United States, British and other financiers.

Search, development, and production in mining in Northwest Canada has achieved a noteworthy momentum that will carry into 1955 with every assurance of another good year. The accomplishments of 1954 were excellent and the outlook for 1955 is better. The picture indeed portrays a happy approach to 1955.

GOLD AGAIN DOMINANT MINERAL

Three Mines Set New Production Record

CONTINUING the unbroken advance in post-war years, the value of minerals produced in the Northwest Territories in 1954 was somewhat higher than in the previous year. Gold, silver, petroleum, and natural gas produced in 1954 was worth $10,548,781; the comparable figure for 1953 was $10,401,589.

Gold was again the dominant mineral. The three mines in the Yellowknife District set new production records in turning out 299,182 ounces of gold worth $10,193,131 as compared to 292,741 ounces worth $10,079,073 in 1953. Silver production was down in 1954 from the previous year, with production valued at $47,880 as compared to $55,165. Norman Wells on the Mackenzie River yielded more petroleum in 1954. Value of the 367,000 barrels produced was $297,270 as compared to 316,889 barrels valued at $257,351 in 1953. Natural gas production increased from $10,000 to $10,500.

There was widespread staking of mineral claims during the year and five new areas were given thorough attention. Exploration and development of the oil potentialities of the Mackenzie District advanced satisfactorily, with several companies carrying out geological and geophysical investigations. Two

oil companies had drilling rigs in operation and a third company planned seismographic work and the drilling of a deep test hole on a favorable structure during the winter.

Gold Mining Progress

Consolidated Discovery are milling 105 tons of gold ore per day with a crew of 95 men. All mining development is below the 700-foot level and current production is coming from the 8th, 9th and 10th levels, with diamond drilling to outline ore reserves being conducted on the 11th, 12th and 13th levels. As the mine goes deeper the ore appears to become richer and a high grade intersection has been made on the 1,850-foot horizon. Gold produced during the month of September amounted to 4,935.8 ounces with 493.6 ounces of silver.

At the Con Mine of Consolidated Mining and Smelting Co. Ltd., they are milling approximately 460 tons of ore per day with a crew of 240 men. Ore is being developed in the Campbell shear zone, but the bulk of production is from the shear zones in the older part of the mine. The winze in the Campbell shear zone is being deepened to 3,050 feet to develop further ore reserves. Average production at the Con Mine is about 6,969 ounces of gold per month and about 2,058 ounces of silver.

At Giant Yellowknife Gold Mines they are milling 760 tons per day with a crew of 390 men. Most of the ore is still being mined in the "B" shaft area with a few stopes operating in both "A" and "C" shaft areas. An underground crusher is being installed and ore is being blocked out in the "A" and "C" shaft areas which are connected underground to "B" shaft where all ore is hoisted to surface. Production averages about 13,500 ounces of gold with about 2,500 ounces of silver per month.

At Eldorado's mine at Port Radium production remains normal, however, statistics are not available for publication.

Uranium and Base Metals

Uranium and base metals continued to highlight staking activities in the Northwest Territories during the season. A copper discovery was made early in the year in the Tree River area on the Arctic coast. The exploration subsidiary of Giant Yellowknife Gold Mines staked an uranium showing near Thekulthili Lake which sparked a minor staking rush to the area. Considerable activity was centred around Marylear Lake in the Marian River area when good diamond drill intersections were made on the one property. In October, a staking rush developed when prospectors discovered good grade pitchblende on claims they had staked earlier in this area.

Development continued at Pine Point Mines on the south shore of Great Slave Lake where they commenced shaft sinking preparatory to an underground bulk sampling program next season. An ore intersection in the shaft proved to contain a high grade of lead and zinc.

Diamond drilling and geological investigations were continued on uranium showings at the Ridley property on the east arm of Great Slave Lake. Tantalum and columbium were mined and milled on a property near Hearne Channel until early August.

During the first six months of the year, more than 1,000 mining claims were staked in the Arctic and Hudson Bay Mining District. A diamond drilling program was performed on the Belcher Islands which outlined three billion tons of iron ore. The shaft was completed at Rankin Inlet and crosscuts were driven on two levels with some drifting from which diamond drills operated during the season. Ore was located by this diamond drilling below a fault which had previously limited ore reserves to about 435,000 tons. Geophysical work was done on a number of mineral claims. Geophysical reconnaissance also was conducted by the Geological Survey of Canada and an iron anomaly was reported near Atzinging Lake. Several claims were staked along the easterly flank of this anomaly but as yet no development has been reported.

As the staking rush at Marian Lake took place during the freeze-up period, it can be expected that this area will receive considerable attention during the next season. Also, the area between Great Slave Lake and Lake Athabaska appears to be the centre of considerable prospecting activity as the search for uranium extends northerly from the Lake Athabaska region.

ALBERTA

Oil, Gas Reserves Increase

Progress Made Toward Solution of Natural Gas Marketing Problems

★ **By H. H. Somerville, Deputy Minister of Mines and Minerals, Alberta**

THE steady increase in proven reserves of both oil and natural gas and progress towards the solution of the natural gas marketing problems were the outstanding features of 1954 in the development of Alberta's oil and gas resources.

Oil production potential increased from 317,000 barrels per day in 1953 to approximately 365,000 barrels per day in 1954. Crude oil production in 1954 averaged 240,000 barrels per day for a total production of over 87,000,000 barrels during the year with a valuation of approximately $220,000,000.00. In 1953 production totalled 77,000,000 barrels with a valuation of $193,000,000.00.

The principal new market obtained in 1954 was the refinery at Ferndale, Washington, which opened in October with a capactiy of 30,000 barrels per day. This refinery took only 15,000 barrels daily of Alberta oil in the first months of its operation, due to the unfavorable competitive position of Alberta crude where water-borne crudes were available. A new 5,000-barrel per day refinery at Kamloops started taking oil last summer. Other market increases are due to increased refinery capacity in the Vancouver area and in Southern Ontario.

Ninety Wells Completed

Well completions in the Pembina field are responsible for most of the increased oil production potential. Climatic and terrain conditions during the summer kept development of the field at a minimum until October. In the last three months of 1954 development work reached the proportions anticipated when the importance of the discovery was realized. In those three months ninety wells were completed and at year's end over fifty drilling rigs were operating in the field.

The wet weather not only delayed drilling operations, but construction of the seventy mile pipeline from the field to Edmonton was also hindered. As a consequence, production from wells that had been completed was dependent on truck transport. By the end of the year the laying of flow lines to wells in the best developed sections of the field was well advanced and production was averaging over 6,000 barrels of crude per day.

200,000 Acres Proven or Semi Proven

Drilling completed at the end of the year at Pembina has indicated that an area of approximately 200,000 acres may be regarded as proven or semi-proven. Successful step-out ventures in several directions give promise that the actual dimensions of the reservoir may be much greater than that. So far six different formations have indicated possibilities of commercial oil production, but practically all wells completed to date are drawing crude from the Cardium sandstone. No pumps or other artificial lifts have been required in the field as the high reservoir pressure has produced flowing wells at all completions after the producing formation has been fractured.

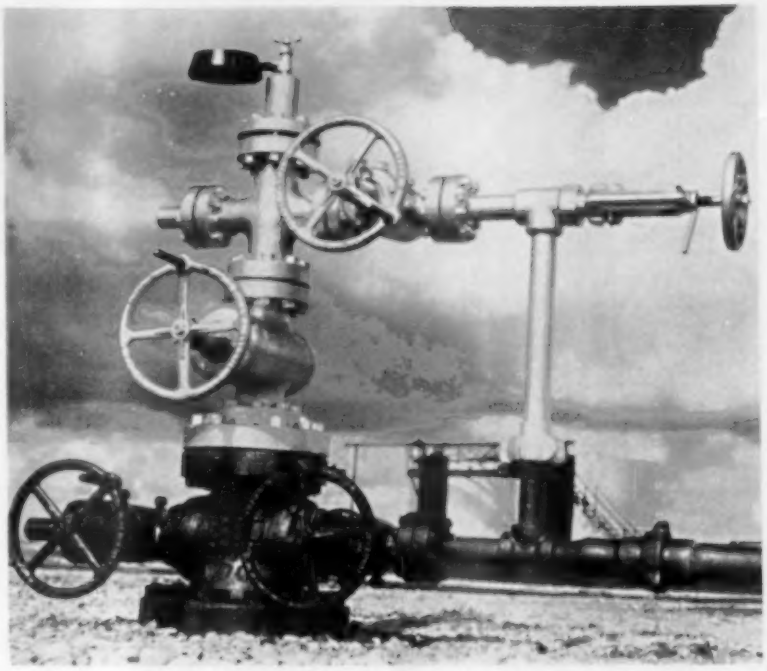
The results of exploration ventures south of the Pembina field indicate that the Cardium Sandstone has production possibilities in a large area of western Alberta. Additional discoveries were made north and east of Rocky Mountain House and northwest of Olds.

Another area that held the spotlight in 1954 was the vicinity of Sturgeon Lake where two or more separate oil pools are being developed; source of the oil is in the Leduc member of the Woodbend formation, the same reef structure as that which produces oil at Redwater, Leduc and Bonnie Glen. The prinicpal difference in this case is that the area is somewhat isolated and terrain conditions are far from ideal for oil development field work. Other factors affecting development of the field are that completion depths are over 8,000 feet, which makes drilling an expensive proposition and the fact that no pipeline connecting the field to a market has yet been built. At the end of the year there were fifteen wells capable of production and six rigs in operation.

Important Discoveries Made

Other development drilling was carried out mainly in the Fenn-Big Valley, Bonnie Glen, Joffre, Rimbey and Hamilton Lake fields. Exploration drilling in the western half of the province was held to a minimum during the summer by the wet terrain. In the last three months over 150 rigs were active and 77 of these were engaged in exploration drilling at the end of the year. In spite of the relatively low number of wild cat completions some very important discoveries were made.

One of these discoveries was a flow of high gravity oil from the Granite Wash at a wildcat well north-east of Sturgeon Lake. This is the first time that this formation, which occurs just above the Precambrian Granite, has produced oil in Alberta.



A completed well in the Pembina field. Alberta government photo by Chuck Ross.

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North of Edson an exploratory well found nearly 1,000 feet of Devonian age reef. At the point of discovery it is water-laden, but knowledge of its existence adds additional weight to the theory that the area between the Sturgeon Lake and Pembina is one of the most promising oil and natural gas exploration regions in the province.

A large number of other discoveries were made during the year, many of them located in previously explored areas where a re-evaluation of information led to the selection of new locations, some of them adjacent to dry holes.

Markets Provided for Natural Gas

Considerable progress was made toward the provision of markets for surplus gas. A permit was granted to export not more that 4.35 trillion cubic feet east from the province. Export of gas from the Peace River area moved a step nearer realization with the announcement in December that contract had been signed for delivery of natural gas to a border point near Vancouver. When these plans are finalized, it is anticipated that the prospect of a market for gas will produce the most active exploration and development program in the history of the province. Although the export of gas has not yet been realized the production of by-products continues to increase. Three new plants for the processing of wet gas produced with oil went into operation. One of these is located in the Bonnie Glen field where it processes gas from Bonnie Glen, Wizard Lake and Glen Park. The plant has a capacity of 20,000,000 cubic feet per day. Products are natural gasoline, propane and butane. The residual dry gas goes to the Edmonton market. The other two plants with a smaller capacity are located at Big Valley and at Acheson, west of Edmonton.

Sulphur Production Capacity Increased

The capacity for the production of elemental sulphur has been increased from sixty tons per day to 110 tons by an addition to the Jumping Pound plant. Production in 1954 totalled 19,871 short tons. The market for sulphur has been considerably increased by orders from uranium refineries. A sulphuric acid plant to be erected in

oil companies had drilling rigs in operation and a third company planned seismographic work and the drilling of a deep test hole on a favorable structure during the winter.

Gold Mining Progress

Consolidated Discovery are milling 105 tons of gold ore per day with a crew of 95 men. All mining development is below the 700-foot level and current production is coming from the 8th, 9th and 10th levels, with diamond drilling to outline ore reserves being conducted on the 11th, 12th and 13th levels. As the mine goes deeper the ore appears to become richer and a high grade intersection has been made on the 1,850-foot horizon. Gold produced during the month of September amounted to 4,935.8 ounces with 493.6 ounces of silver.

At the Con Mine of Consolidated Mining and Smelting Co. Ltd., they are milling approximately 460 tons of ore per day with a crew of 240 men. Ore is being developed in the Campbell shear zone, but the bulk of production is from the shear zones in the older part of the mine. The winze in the Campbell shear zone is being deepened to 3,050 feet to develop further ore reserves. Average production at the Con Mine is about 6,969 ounces of gold per month and about 2,058 ounces of silver.

At Giant Yellowknife Gold Mines they are milling 760 tons per day with a crew of 390 men. Most of the ore is still being mined in the "B" shaft area with a few stopes operating in both "A" and "C" shaft areas. An underground crusher is being installed and ore is being blocked out in the "A" and "C" shaft areas which are connected underground to "B" shaft where all ore is hoisted to surface. Production averages about 13,500 ounces of gold with about 2,500 ounces of silver per month.

At Eldorado's mine at Port Radium production remains normal, however, statistics are not available for publication.

Uranium and Base Metals

Uranium and base metals continued to highlight staking activities in the Northwest Territories during the season. A copper discovery was made early in the year in the Tree River area on the Arctic coast. The exploration subsidiary of Giant Yellowknife Gold Mines staked an uranium showing near Thekulthili Lake which sparked a minor staking rush to the area. Considerable activity was centred around Marylear Lake in the Marian River area when good diamond drill intersections were made on the one property. In October, a staking rush developed when prospectors discovered good grade pitchblende on claims they had staked earlier in this area.

Development continued at Pine Point Mines on the south shore of Great Slave Lake where they commenced shaft sinking preparatory to an underground bulk sampling program next season. An ore intersection in the shaft proved to contain a high grade of lead and zinc.

Diamond drilling and geological investigations were continued on uranium showings at the Ridley property on the east arm of Great Slave Lake. Tantalum and columbium were mined and milled on a property near Hearne Channel until early August.

During the first six months of the year, more than 1,000 mining claims were staked in the Arctic and Hudson Bay Mining District. A diamond drilling program was performed on the Belcher Islands which outlined three billion tons of iron ore. The shaft was completed at Rankin Inlet and crosscuts were driven on two levels with some drifting from which diamond drills operated during the season. Ore was located by this diamond drilling below a fault which had previously limited ore reserves to about 435,000 tons. Geophysical work was done on a number of mineral claims. Geophysical reconnaissance also was conducted by the Geological Survey of Canada and an iron anomaly was reported near Atzinging Lake. Several claims were staked along the easterly flank of this anomaly but as yet no development has been reported.

As the staking rush at Marian Lake took place during the freeze-up period, it can be expected that this area will receive considerable attention during the next season. Also, the area between Great Slave Lake and Lake Athabaska appears to be the centre of considerable prospecting activity as the search for uranium extends northerly from the Lake Athabaska region.

ALBERTA

Oil, Gas Reserves Increase

Progress Made Toward Solution of Natural Gas Marketing Problems

★ **By H. H. Somerville, Deputy Minister of Mines and Minerals, Alberta**

THE steady increase in proven reserves of both oil and natural gas and progress towards the solution of the natural gas marketing problems were the outstanding features of 1954 in the development of Alberta's oil and gas resources.

Oil production potential increased from 317,000 barrels per day in 1953 to approximately 365,000 barrels per day in 1954. Crude oil production in 1954 averaged 240,000 barrels per day for a total production of over 87,000,000 barrels during the year with a valuation of approximately $220,000,000.00. In 1953 production totalled 77,000,000 barrels with a valuation of $193,000,000.00.

The principal new market obtained in 1954 was the refinery at Ferndale, Washington, which opened in October with a capactiy of 30,000 barrels per day. This refinery took only 15,000 barrels daily of Alberta oil in the first months of its operation, due to the unfavorable competitive position of Alberta crude where water-borne crudes were available. A new 5,000-barrel per day refinery at Kamloops started taking oil last summer. Other market increases are due to increased refinery capacity in the Vancouver area and in Southern Ontario.

Ninety Wells Completed

Well completions in the Pembina field are responsible for most of the increased oil production potential. Climatic and terrain conditions during the summer kept development of the field at a minimum until October. In the last three months of 1954 development work reached the proportions anticipated when the importance of the discovery was realized. In those three months ninety wells were completed and at year's end over fifty drilling rigs were operating in the field.

The wet weather not only delayed drilling operations, but construction of the seventy mile pipeline from the field to Edmonton was also hindered. As a consequence, production from wells that had been completed was dependent on truck transport. By the end of the year the laying of flow lines to wells in the best developed sections of the field was well advanced and production was averaging over 6,000 barrels of crude per day.

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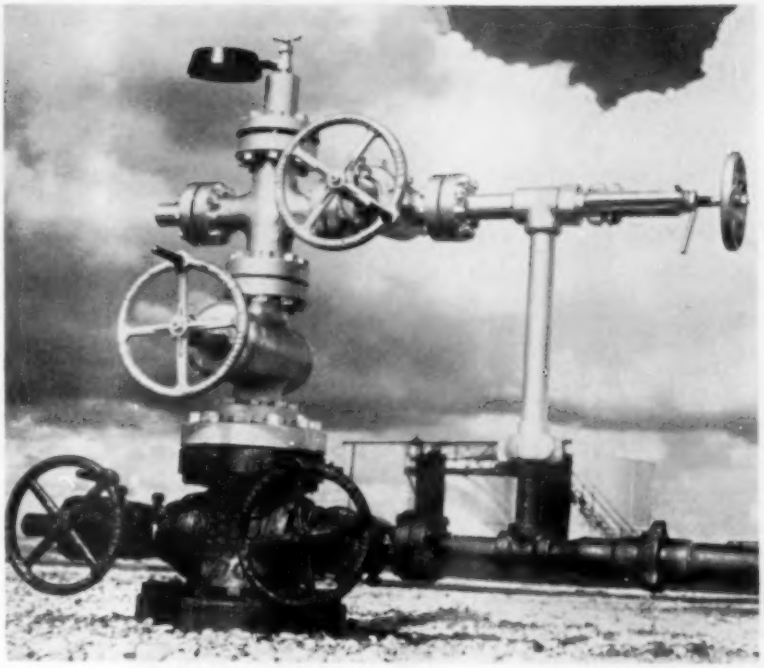

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Drilling activity in the Pembina field.

the province will provide an additional market.

Salt for domestic, industrial and commercial consumption is produced at the Lindbergh plant. Production in 1954 totalled 28,250 tons compared with 25,182 tons in 1953. Much of the increase was due to the growing demand for fused salt of which 8,560 tons were produced in 1954.

Caustic Soda and Chlorine Plant

The caustic soda and chlorine plant at Duvernay completed its first full year of operations with the production of 3,000 tons of caustic soda and 2,250 tons of chlorine. The caustic soda is used in oil refineries, the petrochemical industry, soap manufacture, metallic ore leaching, and the pulp and paper industry. The chlorine is marketed both as liquid chlorine and as hydrochloric acid. As chlorine it is used in the pulp and paper industry and in the manufacture of bleaching agents. As hydrochloric acid one of its principal uses is the acidizing of oil and natural gas wells.

The caustic soda and chlorine are obtained by the electrolysis of salt which is obtained from extensive deposits at Duvernay. A substantial increase in the plant capacity is planned for the current year.

Coal Continues Decline

Coal production has continued the decline that set in after the year of peak production in 1949. In 1954 production totalled 4,859,136 tons, down from 5,917,423 tons in 1953. The principal decrease was in the production of coal of bituminous grade which was formerly the principal fuel of railways operating west of the Great Lakes. The complete dieselization of one transcontinental railway system and partial conversion of the other has depleted that market to such an extent that several of the larger mines have suspended operations. On the other hand consumption of domestic or sub-bituminous coal increased slightly which may indicate a stabilization of the market.

T. P. Fox New President Alberta and NW Chamber of Mines

THOMAS P. FOX, of Edmonton, president of Associated Airways, Ltd., and Associated Helicopters Ltd., both of Edmonton, was elected president of Alberta and Northwest Chamber of Mines and Resources at the 19th annual dinner meeting held in Edmonton on January 13. He succeeds D. J. Avison, who presided over the meeting.

Mr. Fox also is national president of the Air Industries and Transport Association of Canada, having been re-elected last year. An untiring worker in the interests of the Alberta Chamber over a long period of years, Mr. Fox served as vice-president during the past year.

Vice-presidents during the year will be Messrs J. C. Dale, C. Becker, Q. C., and R. H. Driscoll.

Edmonton business men who joined the Chamber during the year are Messrs. G. W. Adams, C. W. Carry, E. A. Cawker, Paul Carlenter, John Dower, E. Henry, D. A. McRae and A. J. O'Donnell.

T. P. Fox
Pres. Alberta N. W. Chamber of Mines

About 350 guests attended the gathering, including representatives of northern mining companies, prospectors, university, business, civic and provincial governments.

Hon. Ivan Casey, minister of lands and forests, representing Premier Manning and the Alberta Government, expressed the government's interest in the mining development which is taking place in the north and assured the meeting of the government's cooperation in furthering these developments. Hon. H. H. Somerville, Deputy minister of mines and minerals, who is a director of the Chamber, was also in attendance.

Mayor Hawrelak, representing the city of Edmonton, recalled his travels in the North and told the meeting that he visualized tremendous activity in the mining areas, and that the city would be interested in doing everything possible to associate itself with these developments.

Mr. Avison, retiring president, reviewed the activities of the Chamber of Mines during 1954. He said there was expansion in every phase of its activities, that its employment services were increasing, and that many new business firms had become members. He particularly mentioned that there had been an increase of 100 per cent in prospectors' memberships during the year.

Operation of a mixed train service between Kitimat and Terrace, B.C., has begun connecting the site of the huge aluminum development with the Canadian National Railway's Prince Rupert line.

SASKATCHEWAN

A Year of Progress

Province has now become one of the great mineral producing areas of the Dominion

By C. A. L. Hogg, Deputy Minister of Mineral Resources.

THE mineral industry in the Province of Saskatchewan has just completed the most successful year in its history. Progress in all phases of the industry has gained for Saskatchewan a place amongst the great mining provinces of Canada and mineral production has become a major factor in the economy of the Province.

The most outstanding progress continues to be made in the Beaverlodge area of Northwestern Saskatchewan.. The frenzied staking of 1952 and 1953 has given way to the more solid exploration work which lacks the color of the staking rush, but which is essential to the development of a stable mining area. During the year the number of claims staked fell from the 1953 high of 18,316 to 7,290. However, the number of mining companies registered in the province increased to 135.

The production of concentrates from the mill of Eldorado Mining and Refining Ltd., in June 1953 signalled the opening of a new era in Saskatchewan's mining history. Since that time the mine has responded to development work so successfully that a 40% increase in the mill capacity has been warranted. The sinking of a new shaft will permit the development of the ore bearing zone over a strike length of some 10,000 ft. Eldorado now ranks with the senior Canadian mines.

Development at Gunnar

Gunnar Mines Ltd., staked in August 1952, held the spotlight during the year. Extensive drilling has proven an orebody which has been estimated to contain upward of $130,000,000 worth of uranium ore and during the year a construction and development program, designed to bring the property into production during 1955 was started.

The first heavy equipment was airlifted to the property before breakup and during the summer over 20,000 tons of freight were taken in by water. At the end of the year the permanent living quarters had been erected, the house and mill were practically complete with machinery being installed, and over 80% of the open-pit mining area had been stripped.

During the summer a 19.5 million dollar debenture issue was quickly oversubscribed and September 1955 was established as the date of first production.

The results obtained by Lorado Uranium Mines in their underground exploration work have stimulated the entire area. Drifting on the 220 ft. level has exposed ore in far greater widths and higher grades than was anticipated from surface drilling. The impressive widths and grades obtained by Lorado have confirmed the decision of a number of other companies to explore their showings underground.

Rix-Athabasca became the first publicly owned company to ship ore to Eldorado's concentrator. The profit picture published by this company was highly encouraging to other companies in the area and was, in part, responsible for the renewed activity.

During this year Nesbitt LaBine commenced shipping ore to the Eldorado mill and Consolidated Nicholson, the property on which pitchblende was recognized in 1935, dewatered their shaft preparatory to mining and shipping ore.

Increasing Activity

The number of companies conducting an active underground development program has increased from 8 to 15 and no less than four companies expect to start shaft sinking during the early months of 1955. Surface exploration and diamond drilling have been carried on by another forty companies.

Meanwhile, other uranium areas of the province received considerable attention. Finds in two new areas, Laird Island in Tazin Lake, and Grease Bay may be considered as new areas or may serve to extend the boundaries of the present Beaverlodge camp. Some diamond drilling was done in the Peak Lake-Twist Lake area with inconclusive results. A pilot mill operated by La Ronge Uranium Mines Ltd., at Nistowiak Lake tested a new leaching process. Further work will be carried on during the coming year.

Late in the season prospectors, operating under the Government Assistance plan, reported a new find some 80 miles from La Ronge.

There was increased activity in the Amisk Lake area of Eastern Saskatchewan. Hudson Bay Mining and Smelting Company Ltd., completed a shaft on their Birch Lake property 13 miles west of Flin Flon and commenced work at the Coronation Mine at Phil Lake, five miles south of Birch Lake. Both properties will be, primarily, copper producers. Production from the main Flin Flon mine of H.B.M. and S. was the second highest in its history.

Tombill Mines Ltd. is conducting a diamond drilling program on a group of claims at Hansen Lake, where copper values have been reported, and Rio Canada Ltd. has taken an option on the property of Wildnest Mines Ltd.

To the west the Department of Mineral Resources carried out an aeromagnetic survey in the Frobisher Lake area which indicated several anomalies. Samples showed that the high readings were caused by deposits of magnetite and a number of claims have been staked in the area.

Production of Sodium Chloride

Turning to the southern part of the province, the production of sodium sulphate and sodium chloride showed increases over 1953. The government-owned Saskatchewan Minerals Corp., operators of the Chaplin plant, purchased the plants at Alsask and Bishopric and the latter plant was rehabilitated and in operaiton by the end of the year. The four active companies, operating five plants, increased their production by 18%. The production of sodium chloride from Dominion Tar and Chemicals plant at Unity was the greatest in its history.

Though coal mining in Canada is a depressed industry production from the strip mines of the Estevan—Bienfait field has been higher only in the years 1950 and 1951. By means of an aggressive sales policy and efficient operation, which has maintained the price level, the Saskatchewan mines produced over 2,115,000 tons of coal having a value of $3,951,000.

The production of raw clay and clay products increased by slightly more than 10% but, with a slight downward trend in the construction industry, the output of sand and gravel was 15% below that of 1953.

Interest in the potash deposits which underlie a vast area of central Saskatchewan reached a new high point during 1954. Western Potash Corp. Ltd., at Vera, Saskatchewan, overcame

their difficulties with water sands by freezing the zone and normal sinking operations continued throughout the remainder of the year. At the end of December this shaft had reached a depth of 1,176 feet.

Major Producer of Potash

Potash Corporation of America Ltd., a wholly-owned subsidiary of Potash Corporation of America, carried out an exploration on land held under permit and, during the summer, located a site for a shaft. Surface buildings have been erected and equipment for shaft sinking is being installed. Meanwhile, freeze holes are being drilled in the shaft area.

During the year two other companies obtained mineral land dispositions under the Potash Regulations and present indications point to Saskacthewan as a major producer of this mineral.

The estimated value of mineral production for the calender year 1954 as compared with the production for 1953 is as follows:

Metals	$38,219,597*	$34,808,830
Industrial Minerals	6,255,197	5,477,586
Fuel (coal, oil & gas)	12,503,000	7,795,554
	$56,977,794*	$48,081,970

* These figures do not include the value of uranium production.

Oil and Gas Industry Growing

The rapid growth of the oil and gas industry in Saskatchewan is indicated by a comparison of the production figures for 1953 and the first ten months of 1954. To the end of October a total of 4,126,288 barrels of crude oil have been produced, which is more than the production for the entire year 1953 when 2,791,472 barrels of oil were produced.

At the end of October there were 1,018 wells capable of producing though only 735 were actually operated.

There was a considerable increase in drilling activity in the province particularly in the South East. The discovery of light crude (39 gravity) at Frobisher and Alida focussed the attention of the oil companies on these areas and further discoveries were made at Walter, Nottingham, Ralph and White Bear.

In the south central part of the province drilling extended to the Midale Field.

In the Southwest new discoveries were made at Instow, South Illerbrun and Bone Creek and the Dollard pool was extended until it has become one of the largest fields in the province.

Amurex Oil Development Co. has developed large reserves in the Hatton gas field. This gas is found in the Medicine Hat Sand and is considered to be a continuation of the Medicine Hat gas field. There was no production from this pool during 1954.

The construction of gas and oil lines within the province has played a large part in the increased production from the various fields. One of the most important of these is the Swift Current pipe line from Swift Current to Regina by means of which oil from the Cantuar-Fosterton-Success fields will reach a market in Minneapolis.

Mid-Saskatchewan Pipe Line Company built a line from the Smiley-Coleville field to enter the Inter-Provincial pipeline at Kerrobert.

For ease in handling a pipeline was built from the Wapella field to the railroad loading point.

A summary of the Oil and Gas statisitcs for the year 1953 and the first ten months of 1954 is as follows:

	1954 (ten months)	1953
Oil Production	4,126,288 (bbl)	2,791,472 (bbl)
Gas Production	3,715,956 MCF	1,739,859 MCF
Wells Drilled	561	645
Footage Drilled	2,081,027	2,327,158
Oilwells capable of producing	1,018	
	1954 (estimated)	1953

per cent from 1953's record figure of $848 million; employment dropped to about 75,000 from 1953's peak of 76,856, while wages and salaries totalled $245 million compared with 1953's figure of $251 million. The number of establishments operated by the industry increased from 422 to 430. One of the facilities opened during 1954—a $12 million power transformer plant in Guelph, Ontario—represents the largest single expansion in the industry's 62-year history.

Competition From Abroad

Competition from abroad has been particularly evident over the past year in the field of electrical capital goods known as 'apparatus', said Mr. Turner, largely because this equipment has a high labor content. With present Canadian wages being roughly three times those paid in Europe, factory costs on Canadian-made equipment are substantially greater than those of European competitors. The premium on the Canadian dollar also lowers the cost of imported goods, thus lowering the competitive prices of foreign equipment.

Electricity continues to provide a basis for Canadian growth, both in the country's already industrialized areas and in the more remote regions now being developed, says Mr. Turner. The year just past saw a sizeable increase in the power available to Canadian utilities and industries. About 1.8 million horsepower of new generating capacity was brought into service during the year, bringing the nation's total installed hydro and thermal capacity to well over 18 million horsepower, or over one horsepower for each man, woman and child in Canada.

Much of 1954's increase is the result of two spectacular hydro developments: Canada's first underground generating station for the vast aluminum development in British Columbia, and Ontario Hydro's new Sir Adam Beck No. 2 generating station on the Niagara River. Agreement reached this year between Canada and the United States on the joint development of the St. Lawrence Seaway and Power Project will add a needed 1.1 million horsepower to Ontario's generating capacity, with the first units to go into operation in 1958.

Electrical Industry Output Fell Slightly in 1954

IN 1954, for the first time in 15 years, the output of Canadian electrical manufacturing industry fell below the level attained in the previous year, in some measure the result of a general levelling off in an economy, which will show a decline in gross national product for the first time in the postwar years, says H. M. Turner, president of Canadian General Electric Company Limited in a review of the year.

In the Canadian electrical manufacturing industry production reached a value of $815 million, a drop of four

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First cargo of aluminum ingots, 246,000 pounds from Kitimat, B.C., was unloaded at Vancouver on January 15. It was bound for Hong Kong.

Gunnar Mines, Ltd., announced it will go into production of uranium ore on its Beaverlodge properties much sooner than expected. Target date for production was Sept. 1, 1955.

HUDSON BAY EXPLORATION AND
DEVELOPMENT COMPANY LIMITED
500 Royal Bank Building, Winnipeg, Manitoba

Prospecting and Development

The Company solicits the submission of
Properties for Examination and Development
Field Office: FLIN FLON, Manitoba

Hudson Bay Mining and Smelting Co., Limited

Producers of

Copper - Zinc - Gold
Silver - Cadmium
Selenium and Tellurium

•

Mine and Metallurgical Plants

FLIN FLON
MANITOBA

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Hydro Electric Plants

ISLAND FALLS
SASKATCHEWAN

HUDSON BAY MINING and SMELTING CO., LIMITED

Incorporated Under The Dominion Companies Act.
December 27, 1927.

MANITOBA

Metal Production Rapidly Expanding

Significant growth in all phases of industry during 1955 indicated

By Hon. Chas. E. Greenlay, Minister of Mines and Mineral Resources.

THE rapidly expanding oil development in the southwestern part of the province and the widespread and intensive exploration in the base metal areas of northern Manitoba continued in 1954, as in the previous year, to be the outstanding achievements of the mineral industry.

Present returns also indicate that a new high in the value of mineral production for Manitoba will be established in 1954. Total value of all mineral production is estimated at $34,952,541 as compared with $25,264,112 in 1953. The previous record of $32,691,173 was achieved in 1950. The most spectacular increase was achieved by the oil industry, which produced products having an estimated value of $5,663,900 as compared with $1,714,806 the previous year.

The value of metal production estimated at $19,906,022 received a substantial boost as the nickel-copper-cobalt mine of Sherritt-Gordon Mines Limited at Lynn Lake reached its rated capacity. Continued low price of zinc continued to affect the value of production of that metal, but the value of copper, gold, silver, cadmium, selenium and tellurium was maintained. Industrial minerals continue to make an important contribution to mineral productivity of the province. The value of minerals in this classification is estimated at $9,382,619.

Lynn Lake Activity Highlight

The copper-nickel deposits of Sherritt Gordon Mines Limited operations at Lynn Lake mine continued as the highlight of mining activity in 1954. Long known as a substantial producer of copper and zinc, Manitoba, due to these operations during the past year, added another non-ferrous metal, nickel, to its list of mineral products. The installation of services for the townsite are practically complete. The mine is operating at normal output and the mill is able to handle in excess of the two thousand tons per day rated capacity. The plant at Fort Saskatchewan is in operation with tonnage being increased steadily to rated capacity of 25 tons of nickel per day. The refinery is also recovering copper and cobalt and producing ammonium sulphate fertilizer.

Hudson Bay Mining and Smelting Co., Limited, carried on its search for metalliferous deposits in the Flin Flon area. The Schist Lake mine was brought into production with ore being trucked to the main plant in Flin Flon. The North Star mine is being readied for production, including the mining of orebodies on the adjacent Don Jon property from the 600-foot level of the North Star shaft. A channel has been excavated for lowering the level of Thompson Lake to expose the North Star orebody.

International Nickel Company of Canada Limited, through its subsidiary, the Canadian Nickel Company Limited, continued its very extensive search for nickel, particularly in the region north of and parallel to the Hudson Bay Railway extending east from Herb Lake through Mystery and Moak Lakes to Assean Lake. Exploration took the form of airborne, magnetic and electromagnetic surveys, ground magnetic, electromagnetic, geochemical, and geological surveys, and diamond drilling. In recent years Mystery Lake has been the scene of a most intensive drilling programme and which has indicated a large tonnage of nickel-bearing material averaging slightly less than one-half of one per cent nickel. During the past year the emphasis has shifted to Moak Lake 10 miles northeast of the Mystery Lake occurrence. Initial exploration at Moak Lake has yielded sufficient encouragement to enable the company to complete plans for the sinking of a 1300-foot shaft and driving of 10,000 feet of underground drifts and crosscuts from which to conduct further drilling. This decision indicates the possibility of a major operation in this area. An increasing demand for nickel has been reflected in an increased price for the metal. This factor together with improved metallurgical practices may make possible the mining of these deposits sooner than could hitherto be expected.

Other Mining Operations

Other major companies which have conducted geological, geophysical, and diamond drilling operations in northern Manitoba during the year include Sherritt Gordon Mines Limited, Falconbridge Nickel Mines Limited, Mystery Lake Nickel Mines Limited, Noranda Mines Limited, God's Lake Gold mines Limited, and Kay Lake Mines Limited. In addition, a number of smaller companies, syndicates, and individual prospectors were active.

In the southeastern part of the province prospecting activity was concentrated on base metals in the English Brook-Bird River region, on lithium in the Cat Lake and Winnipeg River areas, and on uranium in the Tooth Lake and Whiteshell areas.

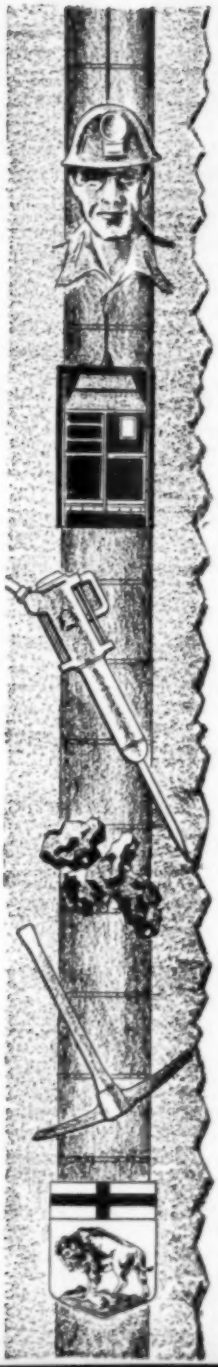
Both the Manitoba Mines Branch and the Geological Survey of Canada engaged in geological mapping in the province. This year also, the Mines Branch let a contract for an aeromagnetic-radiation survey of 1,000 square miles in the Sherridon area. In addition to the airborne investigations of the Mines Branch and those of the Canadian Nickel Company, Noranda Mines Limited made aeromagnetic surveys of three small areas south of Mystery Lake and Eldorado Mining and Refining Company Limited conducted an airborne radiation survey of 5,300 square miles in the Sherridon-Lynn Lake region.

Oil Industry Expands Rapidly

The rapid expansion of the Province's oil industry is emphasized by an increase in production of 325 per cent and in the number of wells drilled of 300 per cent.

The highlights in oil well activity during the year included two discoveries which became declared fields, and seven other discoveries, four of which are developing into important producing areas and will be new fields or extensions of existing fields. At the close of 1953, there were only two declared fields in the province; the Daly and Virden-Roselea fields. Significant production was beginning in the North Virden and Whitewater areas and a small production was obtained from one well each in the Tilston, Coulter, Waskada, and Turtle Mountain areas. By the year end, in 1954, there were six declared fields: Daly, Virden-Roselea, North Virden, Whitewater, Woodnorth, and Pierson. The last two constitute 1954 discoveries. The declared boundaries of the first three fields were extended at intervals as development progressed.

In addition to the fields, the following wells made oil discoveries during



MANITOBA MINING 1955

Developments during the past twelve months indicate that the coming year will be another eventful one for the Manitoba Mining industry. Exploration, development and production, especially in the field of oil and natural gas, have been maintained at high levels and by the latest estimate, 1954 production will be valued at approximately $34,800,000.

The development of existing properties and the opening of new areas is expected to add considerably to the stature of the industry in Manitoba. The success of efforts in the south-western oil fields will merit increased attention. The opening of the Lynn Lake copper-nickel area as a significant producer is also a noteworthy achievement.

Manitoba's diversified mineral production has created a balanced industry . . . an industry offering outstanding opportunities for even greater progress in the years to come.

Department of Mines and Natural Resources

WINNIPEG, MANITOBA

Hon. Chas. E. GREENLAY, Minister J. G. COWAN, Q.C., Deputy Minister

the year. Owen Bekker 13-32 (10-25W1), Dome-Harris Cox Ebor 14-23 (9-29W1), Sooner Hayhurst 8-15 (9-29W1), B-A Union Kool 15-1 (9-28W1), Dome et al South Harmsworth 13-26 (11-26-1), Calstan South Regent 6-7 (4-21W1), Calstan South Virden 1-12 (10-26W1), John Lucien Canart No. 1 (11-29W1), and Souris Valley-Williston Basin-Jeffrey 1-22 (9-26W1). The last three named have not become commercial producers but other wells are expected to be drilled nearby.

Production in 1954

Production for 1954 is estimated at 2,125,000 barrels from 285 wells as compared with 656,315 barrels from 100 wells in 1953. Overall value is estimated at $5,500,000 as compared with $1,714,806 in 1953. In November, 244 wells produced a total of 7,666 barrels per day, equivalent to 30 per cent of oil consumed in Manitoba.

The Daly field, now four years old, continued to expand and had 136 producers as at November 30th, and to this date had yielded a total of 1,783,490 barrels of oil. Discovery of flowing wells in the southwest corner of the field, earlier in the year, resulted in an extension of the field in that direction. Subsequent development has indicated that it will extend to the southeast in Township 9, Range 28, to include new discoveries toward Woodnorth. Renewed interest is being shown in the northeast section of the field, bringing the limits near to the suspended discovery well, Calstan Daly 15-18 (10-27W1).

Development in the Virden-Roselea field extended the field to 55 producers at November 30th, as compared with 18 wells at the end of 1953. The eastern limit of this field was extended twice and drilling has approached to within 1½ miles of the Owen Bekker 13-32 well. Total production to November 30 was 597,607 barrels.

The North Virden Field, with only the discovery well to its credit at the first of the year contained 28 wells and produced 137,957 barrels by November 30th.

Whitewater was developed least of the defined fields, with 4 producers and a total of 26,000 barrels.

The discovery well of the Pierson Field was drilled in February. Development was at first slow but by November 30th, 19,767 barrels have been obtained from 6 wells.

Production from the discovery well of the Woodnorth field commenced in April. This field, at the end of a seven-month period, yielded 25,318 barrels from 6 wells.

Drilling Activity

At year end a heavy concentration of activity was taking place in the east Cromer area. The discovery well, Sooner Hayhurst 8-15, was completed in August. Ten wells were producing by December and two others were being drilled. The area is strategically located between the Daly Field and the Woodnorth Field. The following, southwest, sector of the Daly Field lies three miles northwest; the Woodnorth Field is five miles southeast.

A new area of interest has resulted due to the discovery at B-A Union-Kool 15-1 midway between the Woodnorth Field and East Cromer. Recent developments suggest that these latter two areas may be a southeast extension of the Daly Field.

A successful test in November at Royalite-Triad et al Lulu Lake No. 3 (15-14-1-21W1) indicates renewed interest in the Turtle Mountain area where a small producer was suspended early in 1953.

The issuance of 134 Drilling licenses during the final quarter of the year is indicative of a continuing high level of drilling activity.

Manitoba can look forward to significant growth in all phases of the mineral industry in 1955.

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CIRCULAR ON METAL RESOURCES OF ONTARIO IS PUBLISHED

First of a proposed series of circulars on Ontario's metal resources has been released by Hon. P. T. Kelly, minister of mines. The publication, entitled "Copper, Nickel, Lead and Zinc Deposits in Ontario" is a completely revised edition of earlier preliminary reports dated to May of this year.

All known deposits of these base metals are listed under their respective mining divisions and in the case of those which have been developed to a sufficient extent, all available information is given, including the metals present, the development work done to date, the geology of the area in which the deposit is located, references to the deposit which might be found in other publications or maps, and remarks summarizing the history of the development.

Miscellaneous occurrences, which at their present stage of development are not considered to be worth such full treatment, are listed separately in each mining division.

The publication is the joint work of James E. Thomson, assistant provincial geologist, and H. D. Carlson, S. A. Ferguson, E. G. Pye and W. S. Savage, the department's resident geologists stationed respectively at Kenora, Timmins, Port Arthur and Swastika.

ONTARIO

Again Sets New Records

Production and Prospecting Activity At All-Time High During 1954

By L. Carson Brown, Director of Publicity, Ontario Department of Mines

THE year 1954 saw a number of all-time records go by the board as Ontario's mining industry added up its balance sheets.

First and most tangible of the new records was that of actual production. The preliminary estimate compiled by the Dominion Bureau of Statistics gives Ontario's mineral production as $484,992,796 — 33.4 per cent of the national total of $1,454,196,460. While this in itself is a worthwhile advance over the 1953 total (then a record high) of $474,510,226, it does not tell the whole story. The 1954 figures are preliminary and therefore, necessarily, incomplete. On the basis of past experience, it seems safe to predict that when the final figures are compiled, about another $15,000,000 will be added to the sum total to bring production for the first time over the half billion dollar mark.

The second record, and one which is likely to be reflected production-wise in the years to come, was in prospecting activity. Never in the history of the Province has there been anything to compare with the number of hopefuls who, armed with pick and geiger counter, assailed the rocks of the Pre-Cambrian shield in 1954. Altogether, the offices of the Ontario Department of Mines recorded 50,230 claims—far and away the greatest number ever to be established in Ontario or in any other province in a single year. The previous high of 29,019 was established in 1953. The total area covered by the 1954 stakings represents more than 2,000,000 acres, about 3,140 square miles, or more than the total area of Prince Edward Island.

Manitouwadge Centre of Activity

As could be expected, the greatest concentration of activity was in the Port Arthur-Kowkash area, which includes the great new base-metal area around Manitouwadge Lake. In this division alone there were 21,064 claims staked as compared with 2,586 in 1953. In the Kenora district, where 2,400 claims were recorded, the activity was almost quadrupled as compared with the previous year. Another extremely active area was Southwestern Ontario where the discovery of uranium deposits was chiefly responsible for the recording of 6,217 claims compared with 2,582 in 1953.

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Geco's temporary campsite on Manitouwadge Lake.

"Main Street 1954" at Manitouwadge.

On the other hand, at the year's end prospecting activity appeared to be tapering off in the Algoma-Blind River uranium belt as more advanced development work was proceeded with.

It may be conjectured that the unusual success of the trio of Geraldton prospectors, who made the first find at Manitouwadge, had more than a little influence in prompting the surge of interesting prospecting. Certainly their discovery was followed by one of the greatest treasure hunts of modern times —and many of the hunters were amateurs imbued more by hope than by experience. It is probable that Ontario's Mines Minister, Philip T. Kelly, was on the right track, too, when he said recently that the interest in mining and prospecting engendered by the annual classes for prospectors, which are held every year at a number of points throughout the Province, has been an important contributing factor. Certainly the reports and maps which are prepared by the Geological Branch of the Department, after field work in specific areas, prove to be of inestimable help to the prospector. It was on the basis of one of these reports that Barker, Dawidowich and Forster made their sortie into Manitouwadge.

New Townsite at Geco

Several major mining companies are involved in the Manitouwadge area and, on the main property, the largest, known as Geco Mines Limited, has proceeded with preliminary development work to the point that first production is now expected in 1957. The Ontario Department of Planning and Development with Mines, Lands and Forests, Municipal Affairs and other interested departments, is planning a complete new townsite with a potential population of about 3,000. The Department of Mines, under its Mining Access Roads program in 1954, built a road into the area to connect with Highway 17 to the south. Both the C.N.R. and the C.P.R. are building spur lines into Manitouwadge.

In the new and extremely important Blind River area development work is proceeding rapidly and first production of uranium is expected by September 1st this year. A second mine will be in operation next year and a third in 1957. Of the three mills which are being constructed, one has a 1,500-ton daily capacity and the other two are twice as big. The 3,000-ton mills will be among the largest plants for the treatment of uranium ore anywhere in the world. As a further indication of the size and importance of the operation, it is understood that production purchase contracts which have been completed or are under negotiation with the Dominion government, will total a quarter of a billion dollars.

Potentially important deposits of uranium have been discovered in the Centre Lake area of Southeastern Ontario as the result of widespread prospecting and exploration activity.

There has been considerable interest in the new copper deposits which have been discovered in the Tashota area of Northwestern Ontario. The exploration work for base-metals in the vicinity of Kenora is meeting with encouraging results.

Multi-Million Dollar Programs

In the Sudbury Basin both International Nickel and Falconbridge Mines have under way multi-million dollar expansion programs which will result in greatly increased ore production. Among other things INCO is now constructing the first $16,000,000 unit of a new plant with which it is planned to extract a million tons of high grade iron oxide ore each year from the nickel-copper ores of the district. Not only will this iron represent an extremely important addition to Ontario's mineral production, but with it as a bonus dividend, it will not be feasible to mine a great deal of marginal material which otherwise would be left in the ground.

Present iron ore production from the Steep Rock Range is now about 1,500,000 tons annually. Two mines are now in operation and a third orebody has been leased to the Canadian subsidiary of Inland Steel Corporation. A great deal of preliminary work must be done before production can be started from this orebody, but it is expected that the first ore will be shipped in 1960. With production from this new source at full peak, the total output of the Steep Rock Range will be increased by about 3,000,000 tons annually.

At Marmora, in Eastern Ontario, a new source of iron ore will be brought into production by the Bethlehem Steel Corporation within the next few weeks. Since 1948 the work of stripping off the 130 feet of limestone capping which overlay the deposit of magnetite ore has been proceeding steadily. The orebody is now exposed, and the anticipated production, in the form of agglomerated pellets, will total about 500,000 tons annually.

In spite of the economic difficulties which it in common with other Cana-

dian gold mining interests face, the gold mining industry in Ontario is continuing to operate to such good effect that in 1954 production showed some increase over the previous year.

The Ontario Department of Mines did a great deal to promote activity and productivity during the last year and its program for 1955 calls for a continuation of the effort.

Last year 14 parties, headed by the Department's geologists were engaged in mapping strategic areas of the province. This year's program calls for another 14 parties to carry on the work. Last year a combined airborne magnetometer and scintillometer survey was made of twelve townships (approximately 500 square miles) in the Blind River area, and within the next few weeks another survey of the area immediately to the west will be carried on. This one will take in 16 townships.

The Prospector's Classes which have become an annual service of the Department are being carried on again this winter. The 1954-55 schedule calls for the course in 10 centres. Last year eight classes were held.

In the four years of its operation the Ontario Mines Department's program of constructing Mining Access Roads accomplished a great deal toward opening up new country for prospecting and development. However, it was decided that the program was of such importance to Northern Ontario as a whole that it should properly fall within the scope of the Department of Highways which is better manned and equipped to carry on such work.

Under the new arrangement the Mines Department will retain advisory rights in matters of policy and location of the proposed new roads, but the administration, supervision and maintenance of the roads will be vested in the Highways Department. The expectation is that under this arrangement broader benefits may be made to accrue to the whole province.

Exploration in the Kenora District During 1954

By H. D. Carlson, Geologist, Ontario Department of Mines

THE results of recent mineral exploration activity in the district of Kenora in northwestern Ontario have encouraged those who believe in the potentialities of the region as a producer of base metals. Promising developments are proceeding on two separate properties, both of which are situated less than 55 miles from the town of Kenora. One of these is the Kenora Nickel Mines property, controlled by Falconbridge Nickel Mines, Limited, located 43 miles southeast of Kenora, at Populus Lake. The other is the property of the Quebec Nickel Corporation, Limited, located 52 miles north of Kenora, at Werner Lake.

The Kenora Nickel Mines property was first staked in 1936, after the discovery of sulphide mineralization carrying nickel and copper values in mafic rocks. Subsequent exploration has shown the presence of an intrusive breccia zone, some 2,500 feet long on surface, with a maximum exposed width of 300 feet, which strikes N.30° E. and apparently has a vertical plunge. This zone lies about a quarter of a mile west of the southwest end of Populus Lake. The location of Populus Lake, which is situated about two miles west of the north end of Atikwa Lake, may be seen by reference to map No. 42b (Kakagi Lake Area), Ontario Department of Mines. The intrusive breccia consists of large to small masses and fragments of basic lava, the prevailing country rock, enclosed in an eruptive medium- to coarse-

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grained mafic rock; the inclusions of greenstone appear to have been shattered, broken off, and carried into their present positions by the forceful intrusion of the mafic magna. Certain zones in the intrusive carry ore values in nickel and copper, being variably mineralized with pentlandite, pyrrhotite, chalcopyrite, and pyrite. The position of these ore zones is such as to suggest that the sulphides had crystallized from an immiscible sulphide melt, which had separated out at least partially from the cooling mafic magma and had come to rest and solidified against underlying blocks of greenstone in the breccia.

Million Tons of Ore Indicated

This zone was originally drilled by Coniagas Mines, Limited, in 1937, with a series of inclined holes collared along its east side. Some ten years later a further program of diamond-drilling was carried out by International Nickel Company of Canada, Limited, with a series of inclined holes collared along the west side of the zone. Falconbridge Nickel Mines, Limited, acquired the property by option several years ago, and has further tested the breccia zone with a series of vertical holes spaced on a regular grid pattern at 50-foot intervals, over a length of 900 feet and widths up to 300 feet. The deepest hole is down some 1,500 feet. The results of all the work done up to March, 1954, indicated the presence of roughly 1,000,000 tons of ore, grading about 1 per cent nickel and 0.5 per cent copper. Additional drilling, done during the 1954 field season, has indicated a considerable improvement, in both the grade and tonnage of the ore zones, over previous estimates. The ore zones appear to be a series of lenses, lying one above the other, that plunge uniformly to the northeast at about 55 degrees, and are separated by intervals of waste rock. Dimensions of these lenses are variable, but they may be up to 100 feet wide in places. The ore zones have not been delimited on strike nor at depth. Falconbridge plans further intensive exploration activity on this and surrounding properties during the coming year.

By reference to maps No. 42b (Kakagi Lake Area) and 48d (Eagle Lake Area), Ontario Department of Mines, a region of some 600-700 square miles can be outlined, including the Kenora Nickel Mines property, which appears to be very favorable ground for intensive prospecting for nickel-copper and copper-gold deposits. This area stretches from Kakagi Lake on the southwest for 40 miles to Eagle Lake on the northeast and is up to 20 miles wide in places. Here the prevailing country rock is basic lavas and associated pyroclastics; intrusive into these are a great number of large to small dikes, plugs, and bosses of mafic and ultra-mafic eruptive rocks including peridotite, norite, gabbro, and diorite. Sulphide mineralization, carrying nickel and copper values, has been found in association with a number of these mafic intrusives from one end of the area to the other. There would appear to be excellent possibilities for the discovery of additional nickel-copper orebodies in this region. Several prominent mining companies, including Conwest Exploration Company, Limited, and the M. J. Boylen interest, have acquired ground in the area and are planning exploration programs for 1955.

The Consolidated Mining and Smelting Company of Canada, Limited

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Werner-Gordon Lake Property

Encouraging results have been obtained in the initial stages of an underground exploration program being carried out on the Werner Lake - Gordon Lake property of the Quebec Nickel Corporation, Limited. Intensive surface exploration by diamond-drilling on this ground had determined the presence of a number of apparently isolated lenses of mineralized peridotite, carrying nickel and copper values, which seem to be intrusive into a roughly east-west trending fault zone of considerable magnitude. This fault zone has been traced for a distance of at least 11 miles, apparently dips steeply north, and is marked by a pronounced topographic linear throughout most of its length. The fault passes under and immediately adjacent to the south shore of a small lake, lying just north of Werner Lake, which is variously named Gordon, Lynx, or Nickel Lake. The surface exploration program had more or less delineated, on strike, two zones of possible ore. The first of these, termed the "G" zone, lies under the southeast corner of Gordon Lake, and was estimated by company officials, on the basis of the drilling results, to have a length of 465 feet, an average width of 14.4 feet, and to contain 541,995 tons of material to a depth of 750 feet, having an average grade of 0.42 per cent nickel, 0.68 per cent copper, and 0.07 ounces per ton of precious metals. The second zone, termed the "B" zone, lies under and along the southwest edge of Gordon Lake, and was estimated by company officials to have an average width of 6.5 feet, and to contain 767,671 tons of material having an average grade of 1.15 per cent nickel, 0.36 per cent copper, and 0.12 ounces per ton of precious metals, between the 150-foot and 500-foot horizons. Neither of these zones has been delineated at depth.

A shaft has been sunk on this property to a depth of 360 feet from a point roughly 200 feet south of the southeast corner of Gordon Lake; from this shaft a crosscut has been driven north to intersect the "G" zone on the 300-foot horizon. Drifting has proceeded both east and west along the zone from the main crosscut; in the west drift three stub crosscuts have been driven at short intervals, north and south to the hanging wall and footwall respectively, in order to determine accurately the dimensions and grade of the zone on this horizon. Two lenses of mineralized peridiotite have been cut in this work; a smaller one in the east drift, commencing 50 feet east of the main crosscut, and having a length of 70 feet, is at least 7 feet wide: this lens is on the 300-foot level and appears to have an average grade of 0.45 per cent nickel, 044 per cent cop-

per, and 0.16 ounces per ton of precious metals. A larger lens, exposed in the west drift, commences about 20 feet east of the main crosscut and extends west for a distance of at least 200 feet, with the west end still open; this peridotite lens varies in width from 20 to 65 feet. The two peridotite zones are separated on strike by about 30 feet of sparsely mineralized paragneiss. The sulphide mineralization in the peridotite and immediately adjacent paragneiss consists of pentlandite, pyrrhotite, and chalcopyrite, occurring as sparsley to heavily disseminated grains, and as massive stringers and lenses up to 2 feet in thickness. The best values appear to favor the footwall side of the peridotite.

Much Work Still To Be Done

In the main crosscut, the ore zone has a width of 28.8 feet, and the average of assays of chip samples taken from both walls indicates a grade of 1.29 per cent nickel, 0.59 per cent copper and 0.11 ounces per ton of precious metals. In the No. 301 north and south crosscut, 50 feet west of the main crosscut, the ore zone has a width of 65.5 feet; chip sampling of both walls indicates an average grade of 1.93 per cent nickel, 1.10 per cent copper, and 0.21 ounces per ton of precious metals. In the No. 303 north and south crosscut, 85 feet west of the main crosscut, the ore zone has a width of 37.8 feet; chip sampling of both walls indicates an average grade of 2.61 per cent nickel, 0.85 per cent copper, and 0.035 ounces per ton of precious metals. Assay results of chip sampling of the west drift beyond the No. 303 crosscut, and of the No. 305 crosscut to the west, have not as yet been returned to the property; the peridotite in these sections, however, appears to be rather sparsely mineralized with sulphides. The precious metals, known to occur in the ores are elements of the platinoid group; there may be others. Apparently considerable check assaying and research must still be done before any dollar values can be assigned to the assays for these elements; this would appear to be of the first importance, as the results have considerable significance delineating ore shoots and establishing their grade.

During the 1953 field season, new exposures of mineralized peridotite, carrying copper, and nickel values were found about 4 miles west of the Quebec Nickel shaft site, along the extension of the Werner Lake - Gordon Lake fault in which the Quebec Nickel ore is found. This section of the fault was at least partially tested, with a magnetometer survey and 2,000 feet of diamond-drilling, apparently with inconclusive results, by the Selco Exploration Company, Limited, during the 1953-54 winter season. Norpax Oils and Mines, Limited, have recently acquired this property, and are planning an exploration program on it involving a minimum of 5,000 feet of diamond drilling next year.

During the 1954 field season, an Ontario Department of Mines field party began geological mapping of an area of some 200 square miles in the general vicinity of Werner, Reynar, Wilson, and Trapline Lakes. This work confirmed the presence of several long fault zones marked by strong topographic linears in this region and also a large easterly plunging syncline with pronounced topographic depressions around the nose of the fold at the east end of Trapline Lake. These structures would appear to be favorable zones for the localization of peridotite intrusives and as such merit much more intensive prospecting than they have had to date. There would appear to be excellent possibilities for the discovery of sizeable concentrations of good-grade nickel, copper, precious metals ore in this area.

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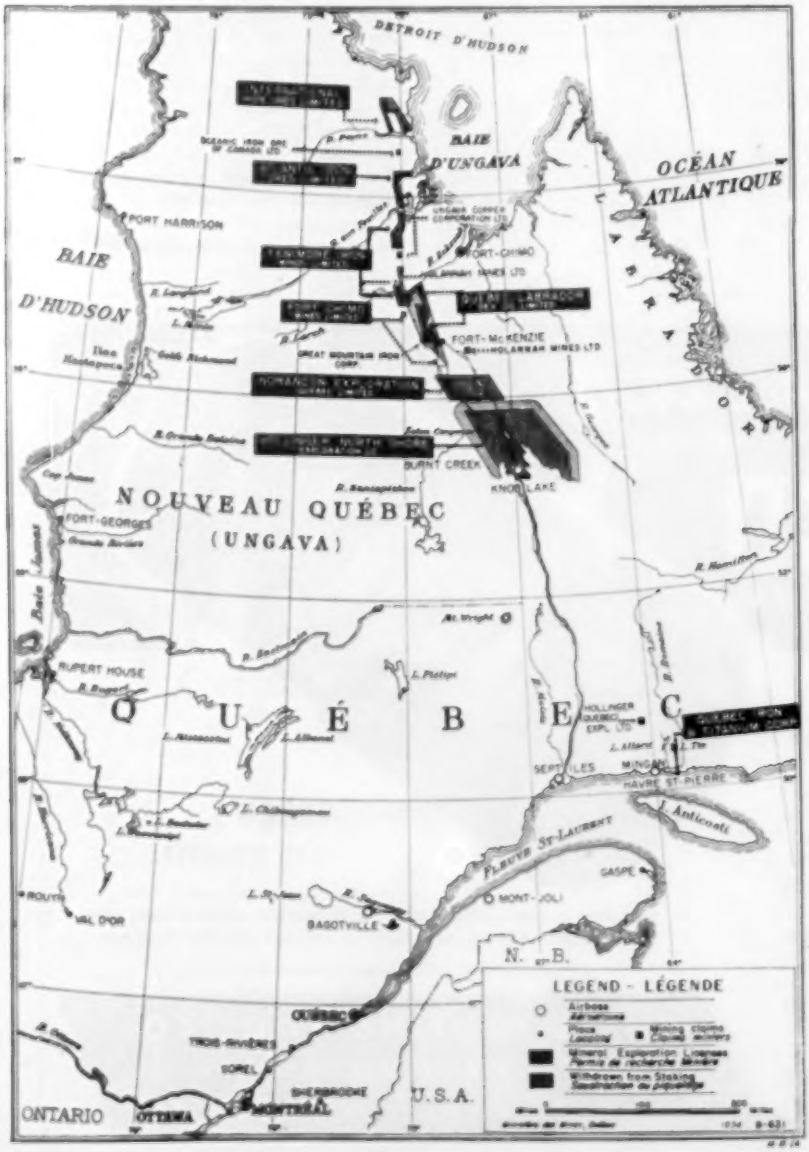
Compiled from Annual Report of Hon. W. M. Cottingham, Minister of Mines, and Data Supplied by Jean-Paul Drolet, Chief, Technical Information Service, Department of Mines.

THE mining industry in Quebec during the past year again made a substantial advance, counteracting the slight setback during the fiscal year, 1953-54, regarding which the minster, Hon. W. M. Cottingham, reported that for the first time in ten years mineral production had shown a decline. Production for the fiscal year amounted in value to $252,354,181 compared with $270,739,552 in 1952. Despite that fact the total value of minerals extracted form the mines of Quebec in the fiscal year 1953-54 accounted for approximately 20 per cent of the total value of the production in Canada, giving the province second place among the Canadian provinces.

Mining output in 1954, however, promises to eclipse all records. Complete figures are not yet available, but approximate totals indicate production valued at $275,550,000 for an all-time high. This is comprised of $126,212,-507 for metals; $94,919,614 for industrial minerals; $54,417,879 building materials.

Most important development during the past year was the entry into production stage of the vast Ungava iron deposits, situated in what is known as the New Quebec Iron Range, major part of which geological formation stretches over a length of some 500 miles and has an average width of 45 miles. The presence of several hundred millions of tons of high-grade iron ore has been confirmed in a section of this formation. During the year these deposits attracted wide attention. Among those signifying interest was the famous Krupp firm of Germany.



360-Mile Railroad Built

Gigantic exploration work during the year was climaxed by the construction of a 360-mile railroad (see map accompanying this article) from Sept-Iles to Schefferville, the new mining town situated near Knob Lake in New Quebec. Construction of the railroad was completed February 12, 1954. It is expected that within a few years, says the minister in his 1954 report, "this railroad will carry alone approximately twice as much iron ore as all the other railroads of the country put together. Despite the fact that, at the start, producion will be limited to one and a half million tons for 1954, it is foreseen that this production will be increased to five million tons by 1955, and that the rate of shipments will continue gradually to increase to 10,000,-000 tons by 1957."

An event of importance, marking a milestone on Quebec's advance to a major position in Canadian mining, was the first shipment on July 3 of ore from the Ungava mines to the United States. Among those attending this epoch-

making affair were United States Secretary of the Treasury George M. Humphrey, Premier Maurice Duplessis of Quebec, and Premier Joseph Smallwood of Newfoundland. Premier Duplessis noted that Ungava represents the largest single enterprise in Quebec's history. When the St. Lawrence Seaway is completed (decision to proceed with this undertaking, which will have a profound effect on the mining industry of Quebec, marked another historic landmark in Canadian progress) shipments from Ungava deposits are expected to increase substantially.

Several shipments were made during the year following the initial shipment. On July 31 the S.S. Hawaiian took a load of 20,000 tons of ore at Seven Islands for delivery to Philadelphia.

First shipment to the Great Lakes area was completed on August 9, when the cargo ship, John H. Price arrived at Buffalo, N.Y., with 2,500 tons of ore.

The first direct shipment for Europe was made on October 21, on the cargo ship Afros, bound for Rotterdam.

The last shipment of the 1954 season was made on December 5, when a Norwegian cargo ship, Boni Hills, took 19,000 tons of iron ore at La Pointe Aux Basques, near Sept-Iles. This ore was delivered to British Iron Ore and Steel Company at Bristol, England.

"The transportation problem arising from the great distances over which ore must be shipped before reaching market, and the shortness of the transportation season, constitutes almost the only unfavorable factors for the New Quebec deposits", says Mr. Drolet. "By way of compensation, however, there are many favorable factors. The ore is easily accessible; it occurs in flat, rolling beds at least 300 feet thick, easily worked by open-pit methods for many years to come; moreover the the ore is a high-grade hematite."

Hydro-electric facilities are plentiful. The total power necessary for the entire development is being provided from two sources. First, a hydro-electric development at Menihek Rapids on the Ashuanipip River, a tributary of the Hamilton River, located about 26 miles from the mine, with an initial capacity of 12,000 h.p. in two units under a 34-foot head, and an ultimate capacity of 24,000 h.p. The 110 kv line, operated initially at 66kv, is to supply power necessary for the power shovels of the mine and for heating and lighting purposes in the new community, which is expected to have about 500 families in a few years.

Another two-unit plant on St. Marguerite River, each unit with a capacity of 8,500 h.p. under a head of 98 feet, is located at Sixty-One Falls, seven miles above the mouth of the river whence a 19-mile, 44 kv line has been built to Seven Islands, site of the ore company's dock loading installation.

Both of these plants were put into operation during the month of June in time for the first operations and shipments.

Ilmenite Development

Good progress was made during the year in the development of ilmenite at Allard Lake, some 400 miles northeast of Quebec City. The deposit is believed to be the world's largest and richest. The titaniferous ore is shipped to Sorel, a town on the south shore of the St. Lawrence River, not far from Montreal, where Quebec Iron and Titanium Corporation treats the ore in specially built electric blast furnaces.

With an eventual capacity of 350,000 tons of ore per year the smelter at Sorel will consume large amounts of power in the largest electric furnaces of their type in the world, each being able to treat 300 tons of ore per day, says Mr. Drolet. "This project of treating ilmenite ore at the Sorel

The Mining Industry *of the* Province of Quebec

The province of Quebec is the largest of the Canadian provinces; its total area is approximately 600,000 square miles.

The following facts are expressions of the great wealth of the mineral domain of Quebec.

(1) The annual value of its mineral production has reached $275,550,000 during 1954.

(2) Metals, of which copper, gold and zinc are the most important, represent over 45 per cent of the total value of all mines and quarries.

(3) Asbestos, of which the world's greatest production comes from the province of Quebec, is the most important item in the table of production with a value of $80,000,000 for 915,000 tons of asbestos fibre.

(4) The value of the mineral subetances used as building materials represent approximately 20 per cent of the total value.

(5) There is also ground for considerable satisfaction in the current mining developments. Among the new projects underway must be mentioned: the exploitation of iron ore in New Quebec and titanium ore at Allard Lake, copper and gold in Chibougamau, copper deposits in Gaspé Peninsula and new productive facilities for the asbestos industry.

HON. W. M. COTTINGHAM,
Minister
A. O. DUFRESNE,
Deputy Minister

Department of Mines of the Province of Quebec

smelter from the world's largest deposits is one of the biggest metallurgical experiments in this country. From this complex ore two products are obtained; iron and steel ingots and slag containing 70 per cent titanium oxide."

J. A. Fuller, president of Shawinigan Water and Power Company, announced on April 29, 1954, that his company had succeeded in making high grade titanium metal by an electrolytic process, and is now planning to expand this work into a larger, semi-commercial plant as the next step toward fully commercial production. The company believes that by this electrolytic process it will be possible to make titanium on a commercial scale at prices substantialy lower than have been possible heretofore.

Production totals for the ilmenite project at Havre St. Pierre for 1954 were 90,885 tons of iron ingots valued at $2,939,144 and 82,386 tons of titanium oxide contained in the slag., valued at $3,680,077.

Gaspe Copper Deposits

still another very important development went ahead in 1954, the operation of Gaspe Copper Mines Limited, a subsidiary of Noranda Mines Limited, at the head of York River in the Gaspe Peninsula. Ore reserves of the copper deposit here are estimated at more than 70,000,000 tons, grading 1.3 per cent copper, with presumably other large reserves close at hand. Gaspe Copper is developing a new mine, building a concentrating plant with an initial capacity of 6,500 tons a day, largest initial milling rate ever to be attempted in Canadian mining, and a smelter capable of producing 125 tons of metallic copper daily.

The Gaspe copper project has also given renewed impetus to many other mineral explorations, besides the producing Consolidated Condego Mines, in the Marsoui area, and the noteworthy prospect of Federal Metals Corporation Limited in the Cascapedia River, says Mr. Drolet. "The establishment of such a large producing mine in a new area is always the incentive to finding and developing other mines. There are many excellent mine-making possibilities in adjacent sections of Gaspe."

Gaspe Copper Mine was not able to obtain the electricity necessary for its milling operations during the year. A break in the cable crossing the St. Lawrence River occurred late in the season and Hydro Quebec, in charge of the Bersimis hydro-electric development, could not repair it before winter came. Nevertheless the concentrator will soon be put into operation on a 2,000-ton per day basis, using steam generated power.

A 24-mile road to Anne Pleureuse has been completed, giving two means of access to Murdochville; one from Gaspe (62 miles) and the other from Anne Pleureuse (24 miles).

Chibougamau Operations

The Chibougamau region, which Mr. Cottingham says in his report, has been perhaps the theatre of greatest activity in Quebec during the last few years, and reached the production stage by December, 1953, when Opemiska Copper Mines started ore shipments, has been the scene of great activity during 1954. This region, says Mr. Cottingham, "covers an area of some 25,000 square miles and is located in geological formations similar to those of Abitibi. According to estimates prepared by interested companies, the reserves of the Chibougamau region exceed 10,000,000 tons of ore, valued at more than $100,000,000."

Three other potential mines at present form the backbone of the district, says Mr. Drolet. "They are Campbell Chibougamau Mines Ltd., Merrill Island Mining Corporation, and Chibougamau Explorers, Ltd. Because some of these properties are widely separated from one another secondary roads had to be built linking them to the main Chibougamau highway. All these are standard roads having a 24-foot gravelled roadbed and in one case a causeway of 3,500 feet was built to connect Merrill Island in Dore Lake to the mainland. With all year-round easy access to Chibougamau, developing companies are finding that costs of operation are in the same range as those experienced in other producing districts of the province".

Campbell Chibougamau Mines Ltd., is expected to enter into production this year. It has leased a part of the Merrill Island Corporation properties.

Decision has been definitely reached to build a railway between Beattyville and Chibougamau. Clearance of the way has already started and C.N.R. officials expect that the railroad will be finished in the course of 1956.

Recently the Department of Mines gave a contract of about $1 million for the completion of a gravel road that will reach Bachelor Lake, which will be the completion of one already existing between Sonneterre and Lac Medeleine in Abitibi.

The railway will offer this important area many advantages.

"At the present time, considering Opemiska Copper in production with a 400 ton mill and Campbell Chibougamau Mines with a 1,700-ton plant under construction, it seems evident that substantial savings could be made by shipping out concentrates by rail rather than by truck as is now being done".

Mr. Drolet says the ore concentrates could be taken direct to the new nickel-copper smelter at Chicoutimi, to be built by the Eastern Smelting and Refining Company at a cost of $8 to $10 million. This new smelter, with a rated capacity for treating 200 tons of nickel-copper concentrates and 200 tons of copper concentrates daily, will be located in an area where both water and railway transportation and power are readily available."

Asbestos Industry

Asbestos mining, located exclusively in the regions of Broughton. Thetford Mines, Black Lake and Asbestos in the Eastern Townships, which suffered a drop in production in 1953, experienced a new expansion during 1954 due to the activities of the big companies operating in the industry.

In the Asbestos district, Canadian Johns-Manville inaugurated at the end of September the first unit of its new mill, which will have an ultimate capacity of 15,000 tons of ore per day.

Asbestos Corporation nearly completed the building of its new mill with a capacity of 5,000 tons per day at its new mine Normandie during 1954. Opening of the mill was scheduled for the middle of the current month.

In the Black Lake area, Johnson's, Ltd., had completed a 4,000-ton daily capacity plant to replace its old mill, while in the same area the American Smelting and Refining Company was going ahead with plans to place the properties of United Asbestos Corporation in production at an estimated cost of $25 millions.

The Quebec asbestos deposits have been producing asbestos for more than 75 years and Mr. Drolet points out that "although open-pit mining is still practised on some of the properties, the economic limit of depth for others has been reached, and an underground method known as block caving is now in use, entailing engineering achievements of the highest order".

Among other important operations projected during the year is the Lithium project. The Quebec Lithium Corporation has outlined a very large deposit containing about 1.3 per cent lithium oxide in Lacorne township, located between Amos and Val D'Or. The company is readying a new concentrating plant with a capacity of 1,200 tons per day, which it is hoped, will enter into production in the course of this year.

Much prospecting and preliminary exploration work has been done in the Oka district, near Montreal, where Columbium, tantalum and other rare metals have been found in numerous zones.

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Other Projects

Among other projects worth mentioning, says Mr. Cottingham, "must be noted the construction and actual operation of the Marelan fire brick plant in the county of Argenteuil. This new plant which gets its ore from Kilmar Mine has a capacity of 200 tons per day, which is the most important of its type in the Commonwealth.

"In the building material field, St. Lawrence Cement has completed construction of its mill at Villeneuve, east of Quebec City, and started deliveries of cement in January of this year. It will be in full production during 1955 with an annual capacity of 500,000 barrels. The present production of cement, which is about 7½ million barrels annually is derived mainly from the two plants of Canada Cement Company, located at Montreal East and at production comes from Cement Quebec Inc., which has its plant at St. Basile, Portneuf county.

"Among the other mineral substances used as construction material, the most important in terms of their production value are sand and gravel, construction stone, and clay products, the last mentioned consisting of bricks, the production value of which presently surpasses $6,000,000.

No doubt about it, horsepower is much safer when only horses have it.

Estimate of Quebec's Mineral Production in 1954

(By the Dominion Bureau of Statistics, Ottawa)

		Quantities	Value
METALLICS			
Bismuth	lb.	70,700	$ 128,674
Copper	lb.	165,193,507	48,170,428
Gold	oz.	1,094,668	37,295,339
Iron (ingots)	tons	90,885	2,939,144
Iron ore	tons	666,645	4,389,300
Lead	lb.	17,052,104	2,273,045
Molybdenite	lb.	875,000	534,000
Selenium	lb.	190,000	950,000
Silver	oz.	5,082,645	4,231,811
Titaniferous iron ore	tons	7,500	17,312
Zinc	lb.	211,754,217	25,283,454
Sub-total 45.80%			$126,212,507
NON-METALLICS			
I. — Industrial minerals			
Asbestos	tons	914,864	$ 79,284,671
Feldspar	tons	15,439	307,741
Industrial lime	tons	369,979	3,344,933
Industrial limestone	tons	420,000	1,135,000
Magnesitic dolomite, brucite and magnesium			4,008,678
Mica	lb.	920,692	64,422
Mineral water	gal.	310,000	165,000
Ochre and iron oxide	tons	5,799	181,073
Peat	tons	22,998	619,993
Quartz	tons	89,248	227,045
Soapstone and talc	tons	12,680	141,738
Sulphur			1,759,243
Titanium oxide(in slag)	tons	82,386	3,680,077
Sub-total 19.74%			$ 94,919,614

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Summary Report for the Period Ended December 31, 1954

	Second Quarter Ended Dec. 31, 1954	Six Months to Dec. 31 1954
TONS MILLED	70,399	141,348
GOLD RECOVERED, OZS.	42,934	84,877
TOTAL REVENUE	$1,743,167	$3,412,169
OPERATING EXPENSE	$1,019,176	$1,943,818
NET PROFIT	$ 258,887	$ 558,342

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NEW BRUNSWICK

Remarkable Progress Recorded

Events of 1954 Presage Even Better Things for Mining Industry in 1955

Compiled From Material Supplied by the Department of Lands and Mines.

THE mining industry in New Brunswick has made remarkable progress in the year 1954, with the promise of even more substantial advancement in the year ahead. Three events stand out as of exceptional importance: opening of the rebuilt Keymet Mines, Ltd. plant at Bathurst, whose 150-ton pilot mill commenced trial runs early this month; readying in October of concentrate to be forwarded to tungsten markets of the world by Burnt Hill Tungsten Mines, Ltd., whose operations are located 65 miles north of Fredericton; and the base metal discovreies of the American Metal Company, 32 miles northwest of Newcastle.

Hon. N. B. Buchanan, minister of lands and mines, has described the discoveries of the American Metal Company 32 miles northwest of Newcastle as being of tremendous importance to the province's expanding mining industry and future economy.

Dr. C. P. Jenney, assistant manager, geological exploration department of the New York Company, in a report to the minister confirming rumors of sensational lead-zinc-copper strikes on the company's Little River mining claims, stated:

"Between June 17, 1954 and October 16, 1954, a total of 27,486 feet of diamond drilling has been completed on the Little River property in 62 drill holes averaging slightly more than 400 feet in length. These holes have in general been drilled along sections 200 feet apart, and have shown the presence of three replacement ore zones. Two of these in the central portion of the property are roughly parallel and about 600 feet apart. The third is located some 8,000 feet to the east along the apparent strike. Drilling is in progress on all zones and on the western part of the property.

3,000,000 Tons of Ore Indicated

"As of October 16th, to a depth of 300 feet, approximately 3,000,000 tons of ore averaging .01 oz. gold; 4.00 oz. silver; 0.50 per cent copper; 4.50 per cent lead and 10.50 per cent zinc, and approximately 1,000,000 tons of ore averaging .007 oz. gold; 0.70 oz. silver; 1.90 per cent copper; 0.10 per cent lead and 0.50 per cent zinc, have been indicated by sampling and assaying. There is an additional tonnage of low-grade lead-zinc ore which will be mined eventually.

"The main ore bodies are irregular replacement deposits in greenstone although some ore has been found in quartz porphry or agglomeritic material resembling quartz of feldspar porphyry. It will require a great deal more drilling on the Little River property, as well as surface stripping and the sinking of prospect shafts, before a complete picture of the ore occurrence can be obtained."

Burnt Hill Tungsten Operations

Some 16 months ago H. M. Porteous, president of Burnt Hill Tungsten Mines, Ltd., of Montreal, and his associates returned to the site they had abandoned in the early 1920s and the reorganized company carried out extensive drifting and drilling operations several hundred feet from the original shaft. Encouraged by the extent and quality of the ore bodies unearthed by the operations the company has spent close to $800,000 on construction of a 150-ton concentrator, regulation width gravel road through 16 miles of heavy timber to the mine site, an electric power plant and permanent up-to-date quarters for its officials and 42 fulltime employees.

Quebec Production Totals

(Continued from page 28)

II. — Building materials			
Building lime	tons	50,000	$ 600,000
Building stone	tons	7,004,179	12,064,436
Cement	brls.	7,580,000	19,212,000
Clay products			8,139,965
Sand-lime products			409,170
Sand and gravel	tons	30,865,750	13,992,308
Sub-total 34.44%			$ 54,417,879
GRAND TOTAL 99.98%			$275,550,000

MODERN MINING EQUIPMENT

Gardner-Denver Company
Rock drill, mine car loaders, slushers, steel sharpeners, compressors and pumps.

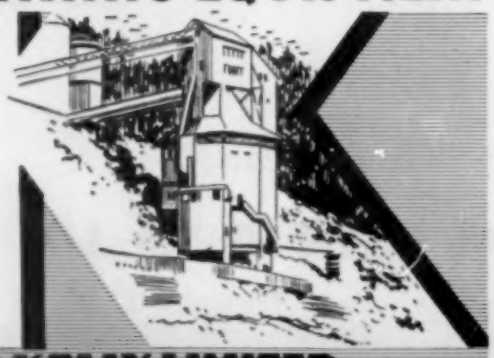
Jeffrey Manufacturing Co.
Conveyors, feeders and chains.

Ransomes & Rapier Ltd.
Shovels and draglines.

Knox Manufacturing Co.
Valves and couplings.

Keystone Lubricating Co.
Specialized lubricants.

Hunslet Engine Co.
Underground diesel locomotives.



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In October, Mr. Porteous in a report to Mines Minister Buchanan confirmed rumors that Burnt Hill had for several weeks been milling concentrate at its York County property for the province's first tungsten shipment since the first Great War.

He reported that besides crushing and milling a substantial number of tons of ore daily in its 150-ton concentrator, two eight-hour shifts had been drifting and raising in the underground drifts while surface crews had been angle-drilling to prove ore body since early in August.

While he would give no estimate of of the ore tonnage proved, he explained the two surface drill holes pulled at 100 feet below No. 2 drift showed five to six feet of excellent core, and that there is no doubt the vein connects with the old mine and is open at both ends.

Enough Ore for 20 Years

In his report, Mr. Porteous stated: "The economic significance of Burnt Hill Tungsten Mines, Ltd., tungsten mine 65 miles north of Fredericton, York Co., N.B., has been under-scored by new tungsten finds during the past 10 days. Drilling to prove the depth of the No. 2 vein has shown that the ore extends from cross cut west to old workings, upwards of 1,200 feet, and is open at both ends. It is now established that the depth of the No. 2 vein is 131 feet open at top and bottom. We estimate sufficient ore is now indicated to supply our present 150-ton concentrator for 20 years. The ore is grading at least three per cent tungsten content. At today's abnormally low market prices for tungsten concentrate each ton of ore should carry approximately $76 of recoverable concentrate. Estimated mining, milling and administration costs will not exceed $7.50 for each ton of ore mined and concentrated. Operating costs will be low for the reason that ore does not have to be hoisted. The company expects that it can earn approximately $67.50 on each ton of ore put through the concentrator.

"The Burnt Hill mine is the only major wolframite tungsten mine in all of Amercia. This fact is significant when the characteristics of wolfram ore are known. Wolframite is found in regular occurrences and is relatively easy to mine. The concentrate from Wolfram ore is in demand because it is relatively easy to reduce. All other known tungsten mines in America are mining sheelite ore which is erratic in occurence and difficult to reduce. We believe the Burnt Hill mine is now assuming major proportions as a source for the supply of a critical material in growing demand in civilian applications and of vital importance in time of war.

"The company is now negotiating for the sale of its product and is confident that a continuing market exists for wolfram concentrate of the type it will be ready to ship within the next few weeks."

Trial Runs Begun

Just over two years after a sensational base metal strike on the site touched-off the greatest staking-rush in Canadian mining annals, Brunswick Mining & Smelting Company's newly-completed 150-ton Pilot Mill commenced trial runs at the company's Brunswick mine 20 miles southwest of Bathurst early in February.

Designed to test ore from the company's Brunswick-Anacon operations, completion of the $350,000 plant marks another mile-post in the development of the multi-million dollar base metal deposits turned up by B.M.&S. president, M. J. Boylen, and associates on their Brunswick, Anacon, New Larder "U" and Keymet holdings in the Bathurst area since January, 1953.

A visit to the Brunswick-Anacon properties later in the year found that while bitter sub-zero weather and deep snow had temporarily slowed down current operations, adverse weather conditions had failed to stop the steady advance in the development of the two mines, situated some five miles apart,

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by the members of the staff and 90 local employees carrying out the work.

L. Riggs, B.M.&S. resident manager, explained that pending the erection of a 4,000-ton concentrator — already in the planning stage — at a location not too far from the Brunswick-Anacon operations, concentrates from the pilot mill will be stock-piled in five storage pits, or shipped to the smelter for refining.

Transportation Problems

Also currently under study, he added, are several methods of moving the ore from the Brunswick-Anacon mines to the as yet undetermined site of the proposed concentrator, and George F. McGowan, a New York transportation consultant, has been engaged to make a survey of the respective merits of the various plans under consideration.

These include, it is understood, construction of a 25 to 30-mile standard gauge company-owned railroad line provided the concentrator is built in Bathurst on a site nearby on Chaleur Bay at an estimated cost of well over $3,000,000.

Use of trucks or construction of a conveyor belt or pipeline provided the site chosen is at or near the Brunswick-Anacon operations;

Or use of the services of the Canadian National Railway main line should a site in some section of New Brunswick finally be selected.

Mr. Riggs disclosed that current plans for Brunswick, where 23 million tons of ore have been proved up, call for stripping to a depth of 250 feet on a 1700 x 300-foot section before sinking a shaft.

At Anacon, where 25-million tons of ore have been proved up, he said, No. 1 shaft is down to the 412-ft. level. Current plans, he added, call for the sinking of a second shaft to a possible depth of 4,200 feet, with a planned first depth of 1,850 feet.

Investment of $1,250,000

First of the Boylen interests, Bathurst mines to go into production, Keymet, some 16 miles north of Bathurst, represents an investment to date of $1,200,000, employs 125 men, practically 100 per cent local, at the 200-ton plant and has reserves of high grade ore for several years. A stretch of four miles in length is still to be explored, and the present mill could be developed from one crushing from 250 to 300 tons a day to a very large operation. The mine shaft has been sunk to the 1,200-ft. level.

At New Larder "U" the company is sinking a shaft and will be spending upwards of $2,500,000 before completing its program for that site. Already in the planning stage is the construction of a mill of a minimum 1,000 tons and possibly an even larger one will be required. The mine is reported capable of going to 2,000 feet in depth, and the plant being geared for an extensive underground program. The break is said to be continuous for 4,600 feet and ore found to date is medium grade with massive sulphites containing lead, zinc, silver and copper.

A few months earlier in October, Premier Flemming was present at the opening of the rebuilt Keymet Mines, Ltd., plant, which had been destroyed by fire in April. Following acceptance of the first lead and zinc concentrate samples ever produced in New Brunswick from Mine Manager Holland Smith, he pushed the button that opened the ore shute from the fine ore bin into the ball crushing mill to start production at the plant. He described the event as a history making milestone in New Brunswick mining annals.

Mining Exploration During 1954 In Cape Breton, N.S.

By Norman Vincent, President, Mineral Exploration Corporation Ltd.

AT the beginning of 1955, there is more scientific data available on the mineral potential of Canada's east coast areas than at any previous time in history.

The majority of important recent Canadian discoveries have been made in this section of the country, so long overlooked. The possibilities range from iron to germanium. The locations include Ungava, Labrador, Gaspe, New Brunswick and now Nova Scotia. Newfoundland, of course, has an established record of success production.

As far as new mining developments are concerned in iron ore, base metals and rare minerals, it is reasonably to expect the spotlight to be focussed chiefly on the Maritimes and the eastern coastline for the next ten years or longer.

Provincial Authorities Act

Cape Breton is the most recent area to attract the interest of serious and substantial mining groups. Geographically, the island was visited by exploration parties during the 16th century, if not earlier. Geologically, the first comprehensive, large scale program of examination was not carried out until 1953.

In that year, the provincial authorities in Nova Scotia set out to stimulate mining industry interest. The agreement under which Minex (Mineral Exploration Corp. Ltd.), undertook, as a first step, an airborne survey extending over one million acres, was the most important result to date of this policy. The Minex concession under this agreement, covers approximately the northern half of Cape Breton's land area.

In a matter of weeks, 6,146 miles of magnetometer and scintillometer surveys were flown and fourteen mineral occurrences mapped, more practical prospecting than had been carried out during the entire previous history of the district. These were located at various points from the extreme south to the extreme north of the Minex concession, most of them strategically close to tidewater. Ground parties followed. At Meat Cove on Cape Breton's northern tip, test pits on surface revealed a rich mineralized zone of high-grade zinc with germanium and cadmium values as well. This proved to be part of larger ore-bearing area from which good grades were also reported. The work of exploration has, therefore, been concentrated at this point.

In November, underground exploration began and an adit is now being driven to open up the indicated orebody. It should reach it early in the year. This underground program will continue till the Meat Cove production potential is known and mining plans completed.

In 1955, as a result, the first answers as to Nova Scotia's future in mining and its probable effect on the economic outlook for the Province should be forthcoming from Cape Breton.

AERIAL VIEW OF THETFORD MINES, QUEBEC

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YUKON *Land of Promise*

Will Be Centre of Largest Mineral Development in Canada, Clarence E. White Predicts

A BRILLIANT future for the Northwest Territories and the Yukon was predicted by Clare E. White, general manager of United Keno Mines, Ltd., in the Yukon, in the course of a speech he delivered as guest speaker at the annual meeting of the Alberta and Northwest Territories Chamber of Mines, held at Edmonton December 13.

Concluding his address with a forecast of the future, Mr. White said:

Forgetting the value of our Northern Territories as a bulwark of defense for North America, what does the future hold for the Territories? Is the effort which must be expended worth our while? The answer is definitely "Yes".

The developments to date in the Territories have far exceeded our fondest hopes of ten years ago. However, there has only been a start made in solving the great problems ahead, and, if the Government of Canada, whose responsibility it is, continues to follow a progressive policy in the Northwest Territories and Yukon, I predict a brilliant future will result.

I see prosperous mines emerging from such discoveries as:—

1. The Kluane Lake nickel owned by Hudson's Bay Exploration Company.
2. The Pelly River lead-zinc showing of Prospectors' Airways.
3. The Hyland Plateau Property of American Smelting and Refining Company.
4. The Ketza River silver-lead properties still in the prospect stage.
5. Pine Point lead and zinc of the Consolidated Mining and Smelting Company.
6. The Marion River Uranium showings,

—and many others.

At the present time the North is bulging with prospectors. In the Yukon alone nearly every major exploration company has parties at work from early spring until late fall. While some very promising showings have been located I am confident that we may expect more and better prospects in the future.

In ten years time I predict the Yukon and Northwest Territories will be the centre of the largest mining developments in Canada and in twenty years I visualize developments which will have world-wide importance.

Text of Mr. White's address follows:

As I fly across Canada I never fail to marvel at the vastness of our great country. Here we have a highly productive area 3,000 miles in length and having an average width of 300 miles. This is capable of providing food for a population several times that of Canada today. Indeed we are a fortunate people. This is the part of Canada best known to the large majority of our population.

It often happens that after a trip across Canada I turn north to either the N.W.T. or the Yukon. I find that Canada really has a second dimension with an average width of some 1,200 miles. I find that Canada does not consist only of "a long slender strip" of land hugging the U.S. border and our transcontinental railways.

Some Major Developments

Now, due to developments in the North we have reluctantly to admit that Canada has a second dimension. Briefly, I will outline the developments which have forced us to look North. While this is far from being a complete list

Five of the directors of the Alberta and Northwest Chamber of Mines who attended the annual dinner meeting. They are left to right: G. W. Adams, D. A. McRae, Dr. John D. Dower, Edwin M. Henry and Paul H. Carpenter. **—Edmonton Journal Photograph**

of these activiites it does indicate the operations in this part of Canada. There are:—

The Knob Lake Iron Development of the Iron Ore Company of Canada.

The Allard Lake Titanium deposits of the Quebec Iron and Titanium Corporation.

The Yellowknife Gold Area including Giant Yellowknife Gold Mines, Ltd., The Con Mine of the Consolidated Mining and Smelting Company of Canada, and Consolidated Discovery Gold Mines, Ltd.

The Pine Point Lead and Zinc of the Consolidated Mining and Smelting Company of Canada, Limited, and Ventures, Limited.

The Great Bear Lake Uranium Deposits of Eldorado Mining and Refining Company Limited.

The Lake Athabasca Uranium Deposits of Eldorado Mining and Refining Company, Limited, and Gunnar Mines, Limited.

The Silver-Lead Deposits in the Mayo Area owned by United Keno Hill Mines Limited, and MacKeno Mines, Limited.

The Placer Gold in the Dawson Area owned by the Yukon Consolidated Gold Corporation, Limited.

The Cassiar Asbestos Deposit of Cassiar Asbestos Corporation, Limited.

The Oil and Gas Fields of Northern Alberta, the Northwest Territories and the Yukon.

The Potential Power Developments in the Yukon now being investigated by Northwest Power Industries, a subsidiary of Ventures, Limited.

While some of these occurrences have been known for many years it was not until the advent of the aeroplane that exploration and development of most of these deposits was possible. In addition to requiring improved transportation another vital factor was necessary in the development of these operations. Men with sufficient vision, and the ability to interest capital had to come forward to push these developments to ultimate production.

Men Who Helped Develop The North

Despite the lack of interest in Northern Canada we have been most fortunate in having some emminent men who have been staunch supporters of the North. Some of these were employed others were in private industry. I would like at this time to pay tribute to some of these men for the contribution they have made to the North and to Canada as a whole.

Dr. Charles Camsell—a true "Son of the North", who has done so much for Northern Canada as an eminent geologist and Deputy Minister of Resources and Development. A truly great man.

Dr. Thayer Lindsley, of Ventures Limited, who has been associated with the development of Giant Gold Mines Limited, United Keno Hill Mines Limited, Pine Point Mines Limited, and now with Northwest Power Industries, who are studying the power potential of the Yukon.

The late Wm. M. Archibald, of the Consolidated Mining and Smelting Company of Canada Limited, who was responsible for some of the early work at Pine Point and at the Con Mine in Yellowknife.

Mr. F. M. Connell, whose foresight was responsible for the revival of the Mayo lead-silver area and for the development and production of Cassiar Asbestos Corporation.

Mr. Gilbert LaBine, the discoverer of the Great Bear Lake uranium property and associated with the Gunnar Mines in the Lake Athabasca area.

Mr. Grant McConnachie of Canadian Pacific Airlines, who had faith and vision to establish air service in many remote sections of Canada.

Aerial view of the Sherritt Gordon Refinery at Fort Saskatchewan, Alberta

SHERRITT GORDON MINES LIMITED

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AMMONIA AMMONIUM SULPHATE (Fertilizer)

MINES — Lynn Lake, Manitoba

REFINERY — Fort Saskatchewan, Alberta

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Dr. Hugh Bostock, of the Geological Survey of Canada, who has given so many years of service to the geology of the North.

While the list could be increased many times, I feel that these men have done a great deal in making our northern territories of use to the Dominion of Canada. Ladies and gentlemen, had it not been for these men the Canadian North would still have been a land of trappers and trading posts. However, due to their foresight, thriving communities have developed which are producing many primary products. The industries and communities have a large purchasing potential and have been responsible in no small measure for the prosperity enjoyed by Canada in the past few years.

Problems of the North

As all of you are aware, the North has been greatly glamorized by the fine writings of such authors as Robert Service. While one cannot deny that the North has a great deal of charm there are many times when persons who live there find this considerably overdone. The visit of Alberta and Northwest Chamber of Mines and Resources to the Yukon in the past year was blessed with very lovely weather. The day that we toured the top of Keno Hill was particularly beautiful and I heard Mayor Hawrelak grudgingly admit that it was probably the best weather your Edmonton members had seen for some months.

This reminds me of a well-known mining man who visited the North regularly during the summer season. He felt that it was necessary to bolster the boys' spirits so he would say, "My, what a wonderful country — what skies — what lakes — when does the next plane leave?"

Regardless of how well some of us may like the North there are four major problems which operators must face continually. These problems are:

1. Transportation
2. Climatic Conditions
3. Social Services
4. Recreation

I will discuss each of these problems briefly.

Transportation

The tarnsportation of light materials and personnel is done chiefly by air or truck from railhead. This is very expensive to all operators in the north who generally provide two-way transportation for each employee every year.

Perishables are transported by air-conditioned refrigerator boats and trucks and must be kept in heated storage for long periods of time.

Heavy materials and concentrates are generally shipped by boat and truck. In the Northwest Territories this involves large shipments during the summer season and large inventories to carry the operations until the beginning of the next season's shipping.

In the Yukon the freeze-up and break-up periods are much shorter than in the Northwest Territories and the inventories necessary are comparatively smaller. However, the base metals produced in the Yukon must be shipped many hundreds of miles to a smelter. To give you a small idea of the transportation problem, I would like to outline the distances that concentrates from the United Keno Hill Mines must travel to Trail, B.C.

Elsa to Whitehorse — 300 miles by truck.

Whitehorse to Skagway — 116 miles by White Pass and Yukon Railway.

Skagway to Vancouver — 900 miles by Canadian Pacific Steamships.

Vancouver to Trail, B.C. — 600 miles by Canadian Pacific Railway.

A total of over — 1,900 miles.

At the present time all concentrates are palletized on 2-ton pallets which require special handling equipment at each point of transfer. The total cost of transportation from the mine to Trail amounts to about $59 per ton of concentrate plus a large investment in trucks, trailers and repair facilities. During the year our truck fleet operated

Technical Mine Consultants, on behalf of various principals, has been responsible for the discovery and development of several major uranium ore deposits, a number of which are . . .

Top-rated in Canadian URANIUM Development

★ **PRONTO Uranium Mines Ltd.** — Pacesetting mine development in Algoma Uranium Mining Camp . . . received $55,000,000.00 government contract mid '54 . . . Production on major scale scheduled to start Sept. 1955 . . . $6,000,000.00 financing completed.

★ **LAKE NORDIC Uranium Mines Ltd.** — One of finest prospects in Algoma Uranium Mining Camp . . . Drilling on northerly extension of the adjoining Algom Nordic ore zone . . . 3 drill program underway as first hole cuts ore making conglomerates . . . $1,075,000.00 placed in treasury to date.

★ **RIX-ATHABASCA Uranium Mines Ltd.** — Moderate sized high grade uranium mine in the Beaverlodge Camp . . . First publicly owned Company to receive government contract and start production in Canada . . . On regular production basis since April 7, 1954 . . . Development expansion program underway . . . Management expects company to establish excellent earnings record.

★ **REXSPAR Uranium & Metals Mining Co. Ltd.** — Major uranium ore development in the Kamloops area of B.C. . . . Underground work on "BD" ore zones indicates 600,000 ton deposit open to extension on west and at depth . . . Current underground work on "A" orebody expected to add substantial new ore tonnage to 110,000 tons drill indicated to date . . . Well situated for low cost operation . . . Property also contains 1,000,000 ton fluorspar deposit.

The 'first in three fields'—Beaverlodge—Algoma—Kamloops—to bring uranium discoveries through to mine development status, Technical Mine Consultants is contributing largely to the development and growth of Canada's uranium resources. Currently preparing several mines for production the Company has become widely regarded as the authority in Canada Uranium exploration—a reputation of which it is justifiably proud.

FRANK R. JOUBIN
Managing Director

TECHNICAL MINE CONSULTANTS
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over 17,000,000 ton miles carrying concentrates and freight.

So much for transportation.

Climatic Conditions

The winters in the North are long and heating of buildings extends from late in August until June 1st. In fact, in many sections of both the Northwest Territories and the Yukon, heating of accommodations is necessary 12 months of the year. Also the temperatures are considerably lower than in the more southern parts of Canada. While average temperatures are rising, this only amounts to 1/10 of one degree per year and it will be many, many years before the climate is temperate.

The regulation of temperature is beyond the control of anyone operating in the North and must merely be taken as one of the necessary evils. I might add that the curse of black flies and mosquitoes in our northern regions also comes under the same category.

Social Services

In any remote place, whether it be in a province or in one of our territories, the provision of social services is always difficult. Schools, hospitals and medical and dental facilities are equally as important to those of us in the territories as to persons living in the provinces. The children born and raised in the North have equal rights to expect educational facilities as those in our more thickly populated centres. While some progress has been made in social services, this is merely in its infancy, and while certain centres such as Yellowknife and Whitehorse have satisfactory services, the remainder of the territories are inadequately provided for. It will be necessary in the next few years to improve the social services in the North a great deal.

Recreation

Recreational facilities in the Territories in general are non-existent and therefore must be provided by the companies. It has been found necessary to install recreation halls for badminton, basket ball and dances as well as curling and skating rinks. These have the effect of keeping people busy and materially reduce the boredom often found in camp life.

It is most unfortunate that throughout the North our Canadian Broadcasting Corporation has not seen fit to provide suitable radio services.

In remote sections mail becomes a very real problem. Everyone wants to hear from home and mail services to the North are inadequate. In certain parts of the Yukon all second class mail comes up the west coast by boat. Thus the men may receive their papers up to two months late so that the news is practically ancient history on arrival.

I feel that in the North, where income tax is the highest in Canada, it is not expecting too much of the Canadian Broadcasting Corporation or the postal department to make some effort toward establishing services which in the provinces you take as being normal.

The Government of the Territories

Both the Northwest Territories and the Yukon have a Territorial Council with certain delegated authority not too different in nature from your provincial governments. These councils have limited legislative powers but no administrative authority. The latter is reserved by the Dominion Government. The chief difference between the Territorial Councils and the provinical governments is the fact that the Territorial Councils do not control the natural resources of the territories. These are reserved to the Dominion of Canada and will in all probability remain so for many years to come. In this reservation I thoroughly concur, but the Dominion Government has a greatly increased responsibility to see that these natural resources are properly developed, conserved and administered.

There are two Dominion Government Departments which have the heaviest responsibilities to the Territories.

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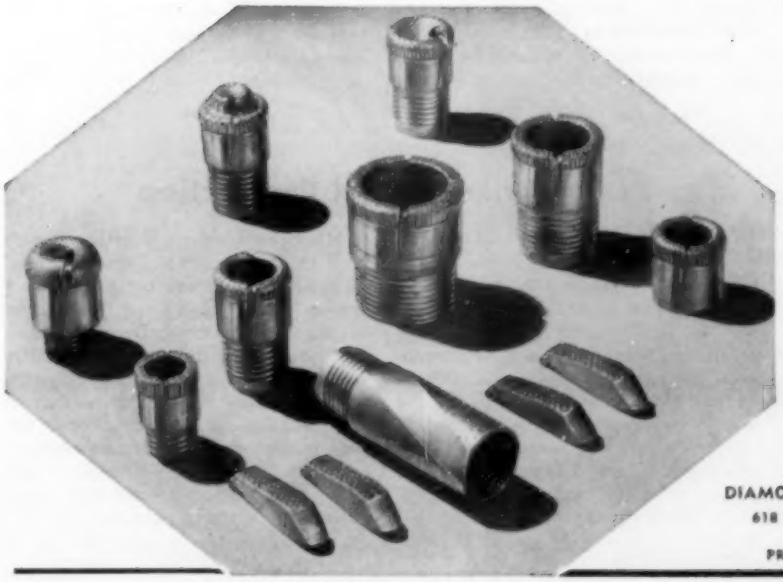

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1. Department of Mines and Technical Surveys.

Minister—The Honorable Mr. George Prudham of this city.

This department is one of the most progressive which is sponsored by the Dominion Government. An excellent job has been done by the members of this department, paritcularly the Geological Survey and Topographical Survey of Canada. They have been responsible in no small part for the discovery of many of the deposits which I mentioned previously. I cannot speak too highly of the work done by these branches in opening up the North. They employ excellent men who have dedicated their lives to the opening up of our uncharted country.

2. Department of Northern Affairs & National Resources.

Minister—The Honorable Mr. Jean LeSage.

This department is chiefly responsible for the administration of the policies as laid down by the cabinet in regard to the Territories. They act as the go-betweens the people in the Territories. I can assure you that the members of this Department have a most difficult and often thankless task to bridge this gap.

This department is also responsible for the control of the natural resources in these vast areas. This includes mines, water power and forest products, a truly colossal job.

There is no doubt that the Canadian Government is awakening to the fact that Northern Canada must be developed. Very recently Prime Minister St. Laurent has said that more attention would be paid to our Northern Territories, and has appointed two young aggressive ministers to the departments concerned. These men are doing everything in their power to see that the North prospers. For this Canadians should be thankful. We must realize that the resources of these territories are our heritage and the heritage of our children. We must not fail in the development of these for Canada as a whole.

However, I feel that something is lacking in our northern policies and I believe this stems from the fact that the Canadian Government is not always getting the best advice on Northern Affairs. This often results in mistakes being made which are avoidable. Therefore, I sincerely propose to the Dominion Government that a Committee on Northern Affairs should be appointed to advise our government on matters effecting the North. The committee could consist of about 10 members made up of persons who are truly interested in the development of the North. While certain government employees would undoubtedly be members of the committee, I do not feel that they should predominate. If possible the Minister of Northern Affairs and National Resources would be an ideal chairman.

I feel that such a Committee of Northern Affairs should have a sufficient budget provided for by the Dominion Government and be free to investigate problems which arise or on which the Government may wish advice. Their recommendations and conclusions could thus be transmitted through the Minister of Northern Affairs to the Cabinet and Prime Minister of Canada. I feel that such a committee should be recruited without pay, and I am convinced that only through some such committee can the colossal problems now facing the North be properly assessed and solved.

I would like at this time to quote a paragraph from an address by the Hon. Jean LeSage to the Canadian Club in Toronto on Monday, November 22, 1954. He says in part:—

"Perhaps the gratest single development that could occur to speed the development of the North would be the construction of railway lines to open the area. We have seen that railways are, and always have been, a decisive factor to the development in Canada. Can we hope for railway lines to and in the North? I am of the opinion that sooner or later railway lines will reach into the Canadian northland and I believe it will be sooner than later."

I feel that such a committee as I have proposed should study this problem in detail and give the minister the correct advice for his future planning.

First Nickel Shipment to U.S. Government From Sherritt Gordon Concentrate

INTERNATIONAL Nickel Company of Canada, Limited, has just made the first shipment of approximately 450,000 pounds of refined nickel to the General Services Administration of the United States Government under a contract signed between the company and the government agency last fall, providing for refining of certain nickel concentrate produced by Sherritt Gordon Mines Limited, Ralph D. Parker, general manager of Canadian Operations of International Nickel, announces.

The contract called for delivery of a minimum of 4,500,000 pounds of refined nickel in the period ending August, 1955. As a result of improvements to its procedure for treating this concentrate, International Nickel will be able to increase deliveries materially beyond the contract minimum.

The concentrate being treated and refined by Inco represents an excess of Sherritt Gordon's Lynn Lake, Manitoba, mine production over the quantity required for processing at its refinery at Fort Saskatchewan, Alberta.

The General Services Administration, through Inco's refining of this concentrate, is thus receiving an additional quantity of nickel which would not otherwise be available. The quantity to be supplied will be in addition to International Nickel's current increased annual production rate of 275,000,000 pounds, and Sherritt Gordon's scheduled production rate of 18,000,000 pounds for 1955.

Lynn Lake Nickel Production

IN the most recent interim progress report from Sherritt Gordon Mines Limited, the president and managing director, Eldon L. Brown says that during the final quarter of 1954 nickel production at Lynn Lake in concentrate, averaged slightly over 2,000,000 lbs per month. Nickel content of the monthly concentrate shipments to their own refinery at Fort Saskatchewan averaged slightly over 1,000,000 lbs. The balance of the nickel concentrate produced was shipped to the International Nickel Company of Canada, Limited, at Coniston, Ontario.

Mr. Brown reports that the refinery at Fort Saskatchewan operated continuously throughout the quarter on a gradually increasing scale. The output of nickel metal during December totalled 641 tons, which was approximately 90 per cent of the plant's rated capacity.

The performance of the refinery, a new plant using a new process, has been satisfactory. As might be expected a number of minor alterations and changes of equipment have been made during the period of operation. Further changes and improvemnets will be effected during the next six months.

who

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Random sampling* from independent and representative lists of business and individuals in randomly selected areas without reference to coverage and circulations of studied business papers showed:

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BNA

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The Trans-Prairie pipe line, carrying crude oil from the Virden area fields to the Interprovincial pipe line station at Cromer, was opened officially on December 15 and is now understood to be moving more than 8,000 b/d. Shown here are scenes at the opening ceremony. Left, among the guests were Dr. Don Allan, The California-Standard Company, Brandon; Robert Wall, Souris Valley Oil Co. Ltd., Winnipeg; F. Leslie Croteau, Trans-Prairie Pipelines Ltd., Calgary; and George McIvor, discoverer of the Virden-Roselea oil field. Center, the small pumping station which receives crude from the McIvor lease was selected for the official opening. Right, J. G. Cowan, deputy minister of mines and natural resources, Manitoba, turned the valve starting the flow of oil from the McIvor Roselea battery into the pipe line.

Manitoba's Oil Industry Booming

Well Completions in 1954 Soared to New Record of 308, an increase of 224%

By Leslie Orr Rowland, Editor Oil in Canada

WITH the most spectacular increase in drilling activity for a single year since oil was first sought on the Canadian plains, Manitoba's well completions for 1954 soared to a new record of 308, an increase of 224 per cent over the 95 wells completed in 1953. This spectacular volume of digging accounted for a similar increase in footage drilled, to 772,703 feet against the modest total of 244,832 feet in 1953.

The count in every division of activity was more than three times the 1953 figure. Development wells completed numbered 223 against 68 in 1953, while 85 wildcats were drilled against 27 the previous year. Footage of development wells at 531,465 was considerably more than three times the 1953 score of 161,307 feet, and wildcat footage of 241,238 was three times the 83,525 feet drilled in 1953.

The development wells demonstrated a good success ratio, with 198 completed as producing oil wells. Of the remainder, six were completed as suspended oil wells with promise of oil, but not capable of commercial production under present economics and with present completion methods; three were completed as salt water disposal wells; and 16 were abandoned as unproductive dry holes.

Out of the 85 wildcat completions, a highly satisfactory success ratio of almost one in nine was secured as nine wells indicated discovery with definite showings of oil. Four of these found new pools which had been actively developed to the point of having at least three wells each by the end of the year. The new pools are Pierson and Woodnorth, both defined as fields by The Oil and Natural Gas Conservation Board of Manitoba, and East Cromer and Ebor, which are both awaiting definition. One discovery remains a single well—the Bekker strike made by James P. Owen east of the Virden-Roselea oil field. One other discovery, the California-Standard South Virden 1-12 well, was suspended after producing 68 barrels of oil.

The three other discoveries all completed drilling within the last few days of 1954 and only one had been confirmed as a commercial producer by the middle of January. This assured success is the California-Standard South Regent 6-7 well, lsd 6-7-4-21WPM, which was completed by Regent Drilling Company Limited late in December at total depth of 2,824 feet (1,177 feet subsea) and plugged back to set production casing at 2,514 feet for production in the Lodgepole member of the Mississippian limestone formation. The site is five miles northwest of the Whitewater oil field and five miles west of the B.A.-Union Croll 4-13 dry hole. It is the fifth commercial oil discovery by The California-Standard Company, pioneer of Manitoba oil exploration and wildcatting.

Dome Exploration (Western) Limited, a persistent wildcatter which started its operations in 1954 and has drilled 14 dry holes for one completed discovery, one successful field extension well and two indicated discoveries, completed drilling both these discoveries in the last few days of December.

The first, Dome et al West Ebor 13-9, lsd 13-9-9-29WPM, was completed by Central Leduc Drilling Co. Limited at total depth of 2,761 feet (1,024 feet subsea) and set production casing at 2,716 feet in the Lodgepole member of the Mississippian. Drillstem tests gave promise of commercial production, but at mid-January the well had not completed production testing. It is either the start of a new pool or an important long extension of the Ebor pool discovered by Dome last summer and now containing five oil wells.

The second, Dome Harris Cox South Harmsworth 13-26, lsd 13-26-11-26WPM, is three miles north of the North Virden oil field, but appears to be on a slightly different structure. The pay zone, also in the Lodgepole member, is believed to be just below the oolitic zone which produces in the North Virden field. If it constitutes a new pool rather than an important extension, it will be very closely related to North Virden. This discovery was com-

BBS-1

World's best known surface drill. Handles "E" rods to 1000 ft. "A" to 800 ft.

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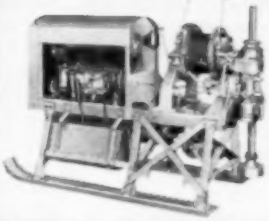
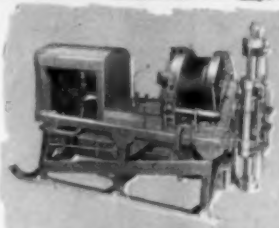
Compact, portable - - 185 lbs. net. Takes ¾" core to 200 ft. Low fuel consumption.



BBS-2

Versatile, choice of 5 swivelheads. Depths to 2400 ft. Gas or diesel.



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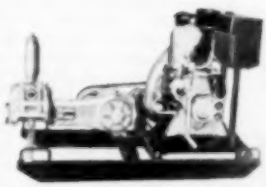

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5-12 and 4-7 models. Capacities 400 to 1200 g.p.h. Diesel motor optional on 5-12.

BBU-2

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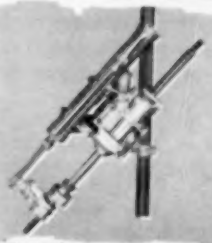

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pleted by Hi-Tower Drilling Co. Ltd. at total depth of 2,031 feet (548 feet subsea) and set production casing at the same depth. At mid-month it was awaiting Sandfrac treatment before being placed on production test.

Seismic Data Difficult

One of the most interesting features of the Manitoba exploratory drilling program in 1954 was the almost complete absence of geophysical data as a foundation for drilling wildcat wells. It has been found by the experience of four or five years' intensive wildcat activity, as well as by the results of the two years of geophysical exploration conducted by The California-Standard Company previously, that Manitoba oil pools are not capable of being detected accurately with the seismograph. The way in which the accumulations occur and the reflection qualities of the glacial drift both make the interpretation of seismic data very difficult. The emphasis this past year has been on the striking of "trends" in relation to existing oil fields and wells which have shown some traces of oil although they have not been commercially productive.

This new approach to the subject has been executed largely through farmout from companies holding property in proximity to indicate possible trends, but in many cases the scarcity of available land for farmouts has compelled companies to do their exploratory drilling in rank wildact areas where there are virtually no clues to the possibility of success. A large amount of wildcat drilling in 1954 was done close to the Mississippian truncation line, in an attempt to find some type of stratigraphic trap which might have accumulated oil in the course of deposition of the later sediments on the Mississippian erosional surface.

Completion of the looping program for the Manitoba section of the Interprovincial pipe line was achieved in 1954 despite water conditions such as this flooded stretch of ditch where the dope gang of Anderson International Contractors Limited is shown lowering in a section of wrapped 24-inch pipe. The Manitoba portion of the line is now in balance with the rest of the system and can handle 167,000 barrels per day out of Gretna pumping station, more than is expected to be shipped in 1955.

Two teams of medium-sized Alberta companies were responsible for the largest amount of drilling on individual farmout contracts. Dome Exploration (Western) Limited and Harris Cox, former vice-president of Western Geophysical Company of Canada, secured a large farmout from Canadian Superior Oil of California Ltd., consisting of 10,000 acres for a half-interest in any production obtained. On this widely checker-boarded acreage the team drilled 17 wildcat wells and one field extension well, making three discoveries of new fields or pools, of which one was confirmed as a new pool. The indicated success ratio of slightly better than one in six is considerably above the long-term international average.

The other team of Sapphire Petroleums Limited, Henderson Oil Holdings Limited, Select Oils Limited and West Canadian Petroleums Ltd., scored a complete run of dry holes with its 14 wildcats on a large farmout of unspecified size from The California-Standard Company. These two teams between them drilled 36 per cent of all the wildcat well completions for the year.

Two other California-Standard farmouts resulted in the drilling of 13 wildcats including one discovery. The partnership of McCarty and Coleman drilled six widely scattered wildcats on its farmout, all unsuccessful. James P. Owen, independent drilling contractor and oil operator from Overton, Texas, completed seven wildcats and made one discovery for six dry holes, also somewhat better than average experience.

Many New Entrants

Other wildcats were drilled by a large number of other companies, some of them previous operators in Manitoba, but mostly new entrants into the Keystone Province inspired by the remarkable discovery ratio of wildcats drilled in the latter half of 1953 and by the fact that land is more readily available in Manitoba than in either of the other prairie provinces. During the second half of the year several large blocks of acreage were turned back to the provincial government under Crown exploration reservation regulations, as their holders had decided to convert the remainder to lease or to drop some reservations altogether after drilling or exploring them. What disposition would be made of these extensive parcels, amounting to some 250,000 acres, had not been decided by mid-January, but it was considered likely that the Oil and Gas Conservation Board would put them up for re-reservation in the case of rank wildcat parcels and try to secure Crown reserve lease bids for the better located rights.

One of the sensational features of 1954 activity was the publication of a report by Dr. J. Campbell Sproule of

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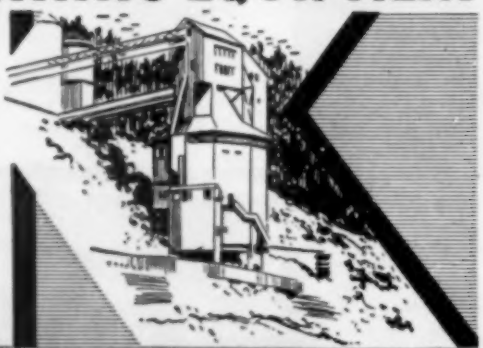

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Calgary, one of Canada's top geologists, on the crude oil reserves of Manitoba, their geological significance, their prospects for the future, and the prospective producing rate over the next 20 years.

Dr. Sproule concluded, with admirable conservatism, that Manitoba's production rate from the three principal Virden area oil fields alone (Daly, Virden-Roselea and North Virden) would rise fairly quickly to 20,000 barrels per day by 1956 and be sustained at that rate until 1975. The sustained rate would be due, he explained, to the projected discovery of new pools and fields to replace the wells which would inevitably become exhausted during the life of the existing fields. As no account was taken of possible discoveries in other areas of the province underlain by Mississippian limestone (in which all oil discoveries have been made so far in Manitoba), it can be concluded that the ultimate producibilty of Manitoba over the next 20 to 25 years may reach several times the figure which Dr. Sproule calculated. Evidence of confirmation of this contention was contained in an estimate of December pipe line deliveries, which were understood to be over 8,000 barrels per day for the line serving the Virden area fields, exclusive of production from fields and wells not connected to the pipe line.

Behind Completion Rate

This important little pipe line, owned and operated by Trans-Prairie Pipelines Ltd. as a million-dollar investment, was opened officially in February, and an extension, taking in the Virden-Roselea and North Virden fields, was opened December 15 by J. G. Cowan, deputy minister of the Department of Mines and Natural Resources. Its 32 miles of pipe serve most of the wells in the three fields which had been completed up to early December, but the system is already far behind the completion rate of the past few weeks and steps are being taken to connect new batteries which require this dependable weatherproof outlets for their oil. The opening of the original line was largely responsible for the abiilty of Daly field wells to make their full allowable or engineering capacity production during the most unseasonable wet summer in memory. The other fields suffered from their dependence on truck transportation during this period of bogged-down roads and an entire month when road bans prohibited the movement of any oil by road vehicles.

Total production for the year, with December esitmated at 9,000 barrels per day for a month's total of 279,000 barrels, is likely to be 2,161,485 barrels. Actual production for the first 11 months, at 1,882,485 barrels, was more than 3½ times the output for the same period of 1953. The average daily production of 9,000 barrels estimated for the final month compares with the much smaller figure of 3,445 barrels per day for January, indicating the spectacular growth of production in this single year. All the oil capable of being produced was utilized, in accordance with the voluntary plan of the crude oil purchasing companies to use local oil to the limit of its producibility up to the point where its production equals the currently operating refinery capacity in Manitoba.

Actually, specific Manitoba oil does not reach the Winnipeg or Brandon refineries, as its quality, equal to that of Redwater, makes it possible to mix into the common pipe line stream, so that some of it may wind up as far away as Sarnia or Clarkson, Ontario.

Refining Capacity 27,000 Barrels

During 1954 an important stage in refining development occurred, with the start of construction on the new North Star Oil Limited refinery in St. Boniface, with its projected rated capacity of 12,000 barrels per day. When it is completed in the late summer of

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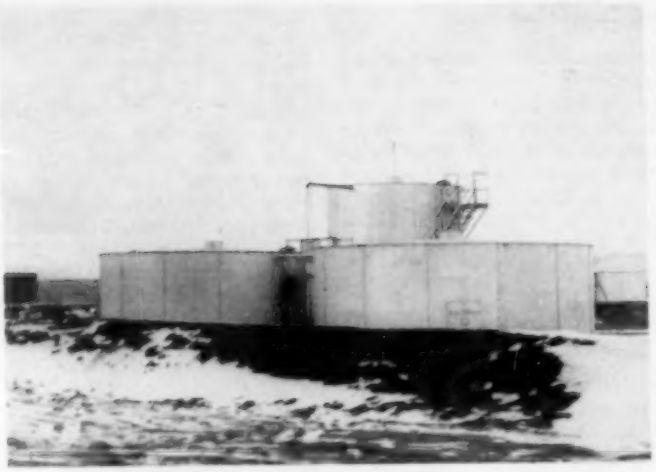

These new aluminum-painted crude oil storage tanks form the production battery on the McIvor lease in the Virden-Roselea oil field. This lease is the one on which the field discovery well was drilled in 1953 and the field had a high development rate in 1954 with 53 producing oil wells drilled to completion. The McIvor family has farmed the property for more than 60 years and George McIvor was one of the participants in the discovery team.

this year, it will raise total refining capacity in the province to more than 27,000 barrels per day, a target for production which will ensure a market for all that can be produced this year and next at the expected rate of development.

Enlargement of the Interprovincial pipe line system, by construction of another 70 miles of 24-inch loop in the Manitoba section, was the other major pipe line event of 1954. This was another stage in the program of raising Interprovincial's capacity to accommodate the increasing load it expects to carry this year due to the increase in consumption of crude oil in its area, as well as the export oil movement from the Fosterton fields of Saskatchewan to St. Paul, Minnesota, via Regina and Gretna.

The direct cost of drilling the 308 wells completed in 1954 was probably $10,000,000. Add to this the proposition of the cost of building the new North Star refinery, about $5,000,000 out of the ultimate $12,000,000 or more, the $8,000,000 spent on pipe line construction, and at least $5,000,000 on marketing facilities (new service stations and bulk stations), and the year's bill for capital outlay by the oil industry amounted to an impressive $28,000,000.

With nearly 300 wells capable of oil production at the end of the year, another 200 or more wellsites proven for production in the fields already defined, and at least 100 wellsites likely to be drilled out successfully in the adjacent areas, the current production rate could be nearly doubled by the end of this year. Although plans of all the companies are not definite enough to venture any confident predictions based on actual figures, it appears safe to estimate that the number of wells to be drilled this year will approximate the number completed in 1954. Given a few more discoveries like the group made at the very end of December, the rate of both wildcat and development well completions could rise to more than 308.

The number of drilling rigs at work in the early part of January was more than double the number at work in January a year ago. The entire month of January 1954 yielded only 18 completions and the entire first quarter a total of 59. The first half of January 1955 produced 17 new wells, suggesting a substantial lead over last year. In the 1954 second half only 44 wells were completed, a figure which should be exceeded materially this year in spite of spring road bans. Activity in the second half is more likely to be level with last year when the second half accounted for 205 wells, more than double the first half.

Production Report Encouraging

The production report for November, accompanying the December summary, was encouraging, showing a new high of 229,993 barrels for the month and a daily average of 7,666 barrels to exceed the October average of 7,558 barrels, the previous record, by 108 barrels per day. The November average was more than double the 3,427 average for November 1953 and brought the first 11 months' cumulative production to 1,882,485 barrels and all-time cumulative to 2,657,631 barrels. The three million cumulative mark was probably reached in the first half of January.

Production from the Daly field was 118,255 barrels or 51 per cent of the total for the province. Of the 136 wells capable of operating, 129 actually produced. For the first 11 months of 1954, Daly produced 1,095,636 barrels, or nearly 60 per cent of the Manitoba total, indicating how the growth of other fields had over taken it progressively as the year advanced. All-time cumulative production of 1,783,490 barrels to the end of November amounted to more than 70 per cent of the provincial total.

The Virden-Roselea field, second largest producer, yielded 67,707 barrels from 55 wells out of 61 capable of being operated, to bring its first 11 months' production up to 541,124 barrels or 28 per cent of the total for the province. Its all-time cumulative production at the end of November was 597,607 barrels or 22 per cent. Its companion field, North Virden, produced 19,949 barrels from 28 of its 29 wells. For the 11 months it had a total of 137,509 barrels, while all-time cumulative was 137,957 barrels.

The minor fields and pools contributed small amounts. Woodnorth, with all nine capable wells producing, accounted for 8,395 barrels and raised its year's total and all-time cumulative to 32,066 barrels. One new producer was added in this field for the month. Cromer was next with 5,838 barrels from nine producing wells constituting the entire field. Its 11-month and all-time cumulative production was 10,930 barrels. Pierson was close behind with 4,294 barrels from all its six wells and brought its year's and all-time cumulative production to 19,767 barrels. Whitewater produced 2,844 barrels from all its four wells, to bring the year's total to 21,580 and all-time cumulative to 26,000 barrels. The two Tilson field wells produced 1,484 barrels, raising the 11-month total to 13,218 and the all-time cumulative to 27,173 barrels.

Among the individual discovery wells, the Owen Bekker well produced 584 barrels for year's and cumulative total of 6,090 barrels. The old Pascar No. 1 Westover discovery, keeping its steady rate of about 10 barrels per day, yielded 312 barrels for year's total of 3,179 and all-time cumulative of 9,210 barrels. The Ebor 14-23 discovery, only well producing in this newest pool in November, produced 331 barrels for 11 months' and all-time cumulative 1,193

barrels. The John Lucien Canart 1 West Daly discovery well was still on the suspended list, with little prospect of resuming production.

Increases Lead

The California-Standard Company increased its lead again over the other principal operator, Canadian Superior Oil of California Ltd. and the team of The British American Oil Company Limited and Union Oil Company of California. Cal-Standard produced 114,021 barrels from 119 wells, including 67 at Daly, 21 at North Virden, 18 at Virden-Roselea, 4 at Whitewater, 4 at Cromer, 3 at Woodnorth and 2 at Pierson. Its proportion of the provincial total was a shade under 50 per cent. The British American-Union team produced 39,549 barrels from its 28 wells, of which 14 are at Virden-Roselea, 6 at Woodnorth, 5 at Daly and 3 at Cromer. Canadian Superior had 28,996 barrels from its 25 wells, including 24 at Daly and one at Virden-Roselea. These two operators between them accounted for not quite 30 per cent of the total.

Imperial Oil Limited produced 13,771 barrels from its 14 wells, 7 at Virden-Roselea, 5 at Daly and 2 at Pierson. In common with the second and third place holders, it showed a moderate decline in production from October. In fourth place, with a substantial decline of 17 per cent from the October figure, was Canadian Pipelines & Petroleums Ltd. which produced 8,566 barrels from its 13 Daly field wells.

Continuing to hold its first place for cumulative production was Cal-Standard Daly Province 3-12, one of the earliest Manitoba producers, which yielded 2,772 barrels in December to bring its total to 77,095 barrels. It was followed closely by its nearest neighbor, Cal-Standard Daly Province 4-12, west offset, which produced 1,805 barrels for cumulative 55,425 barrels.

The flowing wells in the southwest extension area of the Daly field did not produce so prolifically, as only six made the full allowable in November against eight in September. Several more wells, however, exceeded 2,000 barrels for the month.

At the end of November, besides the top two producers, there were seven wells with cumulative production of between 40,000 and 50,000 barrels; seven more between 30,000 and 40,000 barrels; and 26 between 20,000 and 30,000 barrels.

Wildcat Drilling Declines

Wildcat drilling in the latter half of December and first half of January

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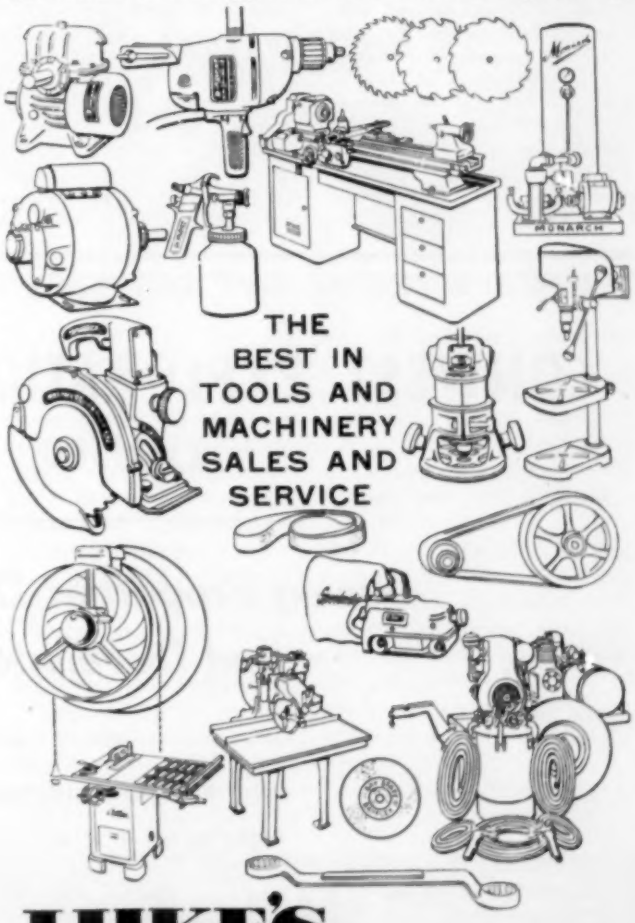

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declined substantially from the high level of the late summer and early fall, as the completion of summer programs left no immediate large-scale operations in progress. The two wildcats completed by Imperial Oil Limited in the region east of the Mississippian truncation line were both dry. The first, Imperial Blossom 3-17-12-24, lsd 3-17-12-24WPM, ground elevation 1,538.2 feet, was drilled to the Precambrian basement at total depth of 4,512 feet (2,962.3 feet subsea). The second, Imperial Norman 4-27-13-23, lsd 4-27-13-23WPM, ground elevatoin 1,674.7 feet, was completed in the top of the Devonian formation at total depth 2,090 feet (403.8 feet subsea). Both were drilled in an area where no wells had been drilled previously, the Blossom well six miles southeast of the Sapphire West Blossom dry hole and the Norman well 11 miles northeast of the Blossom site. Neither found any Mississippian formation.

Five miles west of the Blossom well, Minot operator Howard Saterlie completed his Isaac Ratzlaff 2-26 wildcat, lsd 2-26-12-25WPM, as a dry hole at total depth 2,105 feet (555 feet subsea). Ground elevation was 1,540 feet.

The Sapphire group, including Sapphire Petroleums Limited, Henderson Oil Holdings Ltd., Select Oils Limited and West Canadian Petroleums Limited, completed two dry holes to bring its total to 14 in succession since the start of its program. At Whitewatet Lake, Sapphire South Whitewater 1, lsd 8-14-3-22WPM, ground elevation 1,632 feet, was completed at total depth 2,990 feet (1,352.6 feet subsea), only two miles west of the Whitewater oil field. The latest dry hole, Sapphire East Grande Clairiere 1, lsd 14-16-6-24WPM, ground elevation 1,420 feet, was completed at total depth 2,762 feet (1,333 feet subsea) in the base of the Mississippian formation.

Henderson Oil Holdings, teamed with Blue Crown Petroleums Limited, was equally unsuccessful at an independent wildcat venture, Henderson Blue Crown Carpenter 1, lsd 13-27-10-29WPM, ground elevation 1,735.2 feet, which was drilled to total depth 2,800 feet (1,059.2 feet subsea). In the Butler area, this well was three miles northeast of the Sapphire Northwest Butler dry hole and four miles northwest of the Dome et al North Butler 15-12 wildcat, lsd 15-12-10-29WPM, ground elevation 1,707 feet, one of the only two wells currently drilling at mid-January.

The other new wildcat is Crawford E. Smith Agnew 13-27, lsd 13-27-8-26WPM, ground elevation 1,415.17 feet, near the village of Agnew and five miles east of the Woodnorth oil field. This well is designed as a test of possible production at the angle between Woodnorth and the non-commercial oil discovery drilled and abandoned by Souris Valley Oil Co. Ltd. last fall.

In development operations, the important new areas getting additional wells completed were Ebor and Lulu Lake. At Ebor two more indicated producing wells were completed, raising the pool total to four, and at Lulu Lake the second successful follow-up to the suspended discovery of 1952 was completed as a commercial oil well.

Starting out strongly, the 17 completions in the first half of January included 14 development wells and three wildcats, two of which were abandoned as dry holes but the third, Hallis West Hargrave 7-16, lsd 7-16-11-27WPM, alongside a group of dry holes drilled since 1951, has set production casing to evaluate a possible commercial discovery in the Mississippian.

The development wells, all successful, were well distributed, with 3 each at Daly, North Virden and Cromer, 2 at Virden-Roselea and one each at Pierson, Ebor and Woodnorth.

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Canadian Production of Uranium Advanced in 1954, Says Dr. Convey

REPORTING a sharp increase in Canadian production of uranium concentrates in 1954, Dr. John Convey, head of the mines branch of the Department of Mines and Technical Surveys, said in an interview that the Dominion is already catching up on the Belgian Congo, at present leading producer of raw atomic fuel for the free world.

Figures on actual production are classified, and there is no information available on production behind the Iron Curtain, but Dr. Convey stated that Canada displaced the United States two years ago as the free world's second largest uranium producer. Canada's production of concentrates has steadily increased since that time, but the Belgian Congo is still far ahead.

"We advanced a lot in the production of uranium concentrates during the last 12 months," Dr. Convey said. "In 1955 the advance is expected to be even greater. "We don't expect to overtake the Belgian Congo for some time. However, you could say we are in a threatening position."

Three Canadian mines — two Government-owned and one privately-operated — now are producing uranium concentrates. Dr. Convey said he expects this number will be increased by five or six by the end of 1955.

Any new producers would be owned by private interests. Rt. Hon. C. D. Howe, minister of trade and commerce, told the last session of Parliament that future Government policy would be to encourage the development of privately-owned mines and that no further Government-owned mines are planned.

The two Goverment-owned mines are at Port Radium in the Great Bear Lake region of the Northwest Territories and in the Beaverlodge area of Northern Saskatchewan. They are operated by Eldorado Mining and Refining, a Crown company responsible for production and procurement of uranium.

The privately owned mine also is in the Beaverlodge area of Northern Saskatchewan and is operated by Rix-Athabaska. Three other private companies, Gunnar Mines in the Beaverlodge area, Pronto Uranium in Ontario's Blind River region, and Consolidated Nicholson in the Beaverlodge district have received contracts to deliver ore to the Eldorado company although they are not yet producing.

Private mining companies also are expanding efforts to locate uranium ore bodies which can be mined profitably. Most of this work is taking place in the Beaverlodge, Lake Athabasca, Great Bear and Blind River areas.

All uranium ore mined in Canada is purchased by the Eldorado company. After the ore has been milled it is shipped to the company's plant at Port Hope, Ont., where it is processed into concentrates.

This product then is shipped to the United States where it is refined into pure uranium metal. All uranium metal used at the atomic energy plant at Chalk River, Ont., comes from the U.S.

However, Canada is approaching the day when she will be producing her own uranium metal. The Port Hope plant now is being expanded to make it possible for uranium concentrates to be purified to the point at which metal-processing techniques begin.

Officials of the Eldorado company say they expect that the Port Hope extension, started last summer, will be completed by the end of June. The next step will be to equip the plant with facilities to produce pure uranium metal. This is expected within the next few years following studies on an economical method of metal production.

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1954 a Year of Great Progress In Canadian Uranium Industry

By Franc R. Joubin, managing director, Technical Mine Consultants Limited and Donald H. James, geologist, Technical Mine Consultants Limited.

THE past year was certainly an important milestone in Canadian uranium developments across Canada.

In the Northwest Territories, at Great Bear Lake, the parent mine of Eldorado Mining and Refining Limited, continued to produce and maintain its ore reserves at its moderate size, high-grade mine. Towards the close of the year, new uranium discoveries of pitchblende, were being successfully diamond drilled in the Marion River section, west of Yellowknife, and underground development for at least one property is planned.

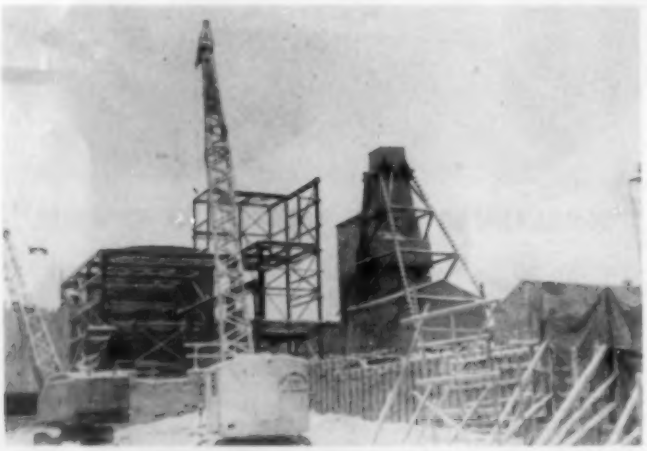
In British Columbia, new discoveries of pitchblende, of still undetermined value, were made in the Atlin section, while underground development and diamond drilling continued for the third year on the Rexspar Uranium & Metals Mining Co. Limited property near Kamloops. The Rexspar property, with almost one million tons of low grade ore situated beside the railroad, is considering production plans.

Beaverlodge Area Very Active

In Saskatchewan, the Beaverlodge area remained very active. The large Eldorado mill, now undergoing enlargement, not only handled its own ore from the Ace and Fay Mines but also purchased custom ore. The company continued to enlarge the ore potential of its huge property by sinking its third large production shaft at Werner Lake. The Rix Athabasca Uranium company commenced production in April under a five-year contract at the rate of 100 tons daily from its Smitty mine, becoming Canada's first publicly owned post-war producer of uranium. This ore is trucked to the Eldorado mill for treatment. The Rix quarterly statements have provided the public with the first factual evidence that uranium mining in Canada can be highly profitable. In September Nesbitt LaBine Mines shipped its development ore dump to the Eldorado mill, becoming the district's second crude ore producer. Other properties in the camp that may become probably crude ore producers, Eldorado mill capacity allowing, include National Exploration, Cinch Lake Uranium, Consolidated Nicholson, Meta Uranium and Lorado.

The important Gunnar mine scheduled for production at a rate of 800 to 1,000 tons daily commencing in September, 1955, prepared its mine and undertook much plant construction. Probably the highlights of the past year in the Beaverlodge area were the spectacular underground development results enjoyed by Lorado Mines Limited, which promises to be both a large and a high-grade mine and the spectacular diamond drill results secured on the property of Meta Uranium Mines and the ABC group of Nesbitt-LaBine Mines. Evidently, technical and financial courage are still producing orebodies in the important Beaverlodge field.

The Charlesbois Lake and Lake La-Ronge areas of Saskatchewan were quiet, probably because of the low grade, remote nature of these camps and the appearance of more attractive fields.



Temporary head frame and surface plant (top) and crusher house (bottom) at the Pronto Uranium Mines, Ltd., operations in Saskatchewan. Photos supplied by Technical Mine Consultants, Ltd.

Big Strides in Ontario

Uranium developments in Ontario, during 1954, took tremendous strides and commanded international attention. Areas of interest were the North Bay (Beaucage Mines Limited) columbium-uranium deposits; the Nemegos (Multi-Minerals Mines Limited) columbium-tantalum-uranium deposits; the Bancroft (Faraday Uranium Mines Limited, Centre Lake Mines Limited, Croft

Uranium Mines Limited and Dyno Uranium Mines Limited) uraninite-rare earth deposits and most important of all the Algoma (Blind River) district.

During 1954, the Algoma camp established itself beyond any question as one of the most prolific uranium-bearing districts in the world. Two companies alone, Algom Uranium Mines Limited and Pronto Uranium Mines Limited, developed by diamond drilling, during the year, a total of eighteen million tons of ore in three huge ore-bodies. These tonnage estimates are to slope depths of one thousand feet only whereas a few widely spaced drill holes have followed the ore to a slope depth exceeding fifteen thousand feet. There is little wonder that this camp has acquired the name "the billion dollar camp". The Pronto Company is constructing a 1,200 to 1,500-ton per day mill scheduled for production in September 1955, while the Algom Company is constructing two 3,000 tons per day mills (believed the world's largest all-uranium mills) scheduled for production in June 1956 and September 1956. Other companies in this camp with important drill-indicated ore reserves are Consolidated Denison Mines Limited, Buckles Algoma Uranium Mines Limited and Pardee (Aquarius group) Uranium Mines Limited. Scores of well financed, well managed exploration companies are active in the field and undoubtedly several will be rewarded with success.

Quebec and New Brunswick

Quebec contributed to the uranium news during 1954 from the Oka district, near Montreal. Here the Molybdenite Corporation of Canada Limited drill-developed an apparently large deposit containing a high content of rare earths, much thorium and minor uranium. Details of the deposit are unknown but it appears to rank as important.

New Brunswick, which has been much in the base metal limelight of late, made its debut as a uranium-bearing province during 1954 when widespread but low-grade uranium-bearing fluorite zones were discovered in a large centering near Harvey, south of Fredericton. The value of these discoveries was not determined during 1954 but the area will undoubtedly command much prospecting attention during the coming year.

In conclusion, it can be said that 1954 was a year of great progress in Canadian uranium activity. It produced factual support for these predictions; by 1956 Canada will boast the world's largest uranium mine and mill; by 1957 uranium production in Canada will amount to $100,000,000. annually; by that date Canada will be the second largest, if not the largest, producer of uranium in the Western World. Truly tremendous accomplishments for the eight year period since uranium prospecting became "legitimate".

Gold Mine Subsidy Continued

THE Emergency Gold Mining Assistance Act is to be continued for another two years Mines Minister Prudham announced in the House of Commons on January 27, but it will be on a reduced scale, saving the Treasury and taxpayers $4,500,000 a year.

Under the new scale mines whose production costs are $26.50 an ounce or less will not be eligible for aid; previously costs exceeding $18 an ounce entitled a mine to aid. The maximum rate of assistant is to be reduced to $12.33 an ounce from $13.50.

Assistance will be on the basis of two-thirds of production costs exceeding $26.50 an ounce up to a cost ceiling of $45 an ounce. Payment to the mine will cover two-thirds of the production in the current year.

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Mineral Production of All Kinds Set New Records in 1954

NEW records were established by the mineral industry of Canada during 1954, the value of production reaching $1,454,000,000, according to a preliminary estimate prepared by the Dominion Bureau of Statistics at Ottawa. This was a gain of nearly $118 millions or 8.8 per cent over the 1,336 millions of the preceding year. The total value ni 1954 was treble that of 1944.

All the provinces showed greater mineral value than in 1953 and each of the classifications, metals, non-metallics, fuels, and structural materials, reached new highs in total values. Crude petroleum increased by $45 millions, copper was up $23 millions, nickel increased nearly $20 millions and asbestos gained $7 millions. Coal and zinc appeared on the darker side of the picture, each with a decline of $7 millions.

Metals

Metals produced in 1954, valued at $763 millions, showed an increase of 7.6 per cent over the $709 million of 1953. These gains were distributed as follow:

Gold production of 4,280 000 ounces, valued at $145.8 millions was higher, although the price per ounce was less than in 1953. The settlement of strikes in the earlier part of the year permitted the mines to resume production.

Production of nearly 300,000 tons of copper was encouraged by the demand, which maintained the price at a fairly high level.

Nickel production of 160,000 tons, valued at $180 millions, was 11.5 per cent higher in tonnage.

Lead increased from 194,000 tons to 221.000 tons, valued at $59 millions.

The volume of zinc declined from 402,000 tons to 374,000 tons and decreased in value to $89 millions.

Iron ore shipped amounted to 7.3 million tons, a new high in Canadian output. Shipments from the new iron mines in New Quebec and Labrador counterbalanced the lessened exports to steel plants in the Great Lakes area.

Silver, a by-product of many non-ferrous metal mines, increased by 3 million ounces.

Platinum group metals value amounted to $20 millions.

Mineral Fuels

Mineral fuels were valued at $354.7 millions, an increase of nearly 13 per cent over the $314.2 millions in 1953.

Crude petroleum continued to lead all other minerals in value of production. The output was more than 95 million barrels, valued at $246 millions. Alberta increased the production by 11 million barrels, but the greatest percentage gain was shown by Manitoba with an output of 2 million barrels, which was treble the previous year's production.

The natural gas volume was up 20 billion cubic feet to 122.2 million M. cu. ft.

The conversion of coal burning equipment by railroads and industry have adversely affected the coal mining industry. In 1954 the coal output was 14,825,000 tons, down a million tons from the preceding year. Coal production was down 22.5 per cent from the high of 19.1 million tons in 1950.

Other Non-Metallic Minerals

The value of other non-metallic minerals was $136.6 millions. The greater portion was derived from sales of 966,000 tons of asbestos, valued at $93 millions, a new high in tonnage and value.

Salt and sulphur increased in total value and there was a greater tonnage of fluorspar and sodium sulphate shipped. Shipments of barite, gypsum, soapstone and talc were approximately the same as in the preceding year.

Structural Materials

Structural materials approximated $200 million in value. Cement shipments of 22.5 million barrels was 300,000 barrels more than in 1953. The value of brick, tile, pottery, etc., was $31.5 millions, an increase of 5.7 per cent. Sand and gravel used for roads, concrete aggregate, etc., totalled $56.9 millions. The tonnage of stone increased disproportionately in 1954 due to the large volume used in the construction of the Canso highway. Stone used for buildings, ballast, concrete aggregate, highways, etc., was valued at $37.2 millions.

MINERAL PRODUCTION OF CANADA, BY KINDS, 1953 AND 1954

	Unit of measure	1953		1954	
		Quantity	Value	Quantity	Value
			$		$
METALLICS					
Antimony	lb.	1,488,105	291,862	1,201,000	321,150
Bismuth	lb.	117,366	209,557	272,700	583 174
Cadmium	lb.	1,118,285	2,236,570	1,027,221	1,746,276
Cobalt	lb.	1,602,545	4.013,077	2,181,900	5,593,200
Copper	lb.	506,504,074	150,953,742	599,851,280	174,139,274
Gold	fine oz.	4,055,723	139.597,985	4,279,852	145,814,558
Indium	fine oz.	6,752	9,588	———	———
Iron Ore	ton	6,509,818	44,102,944	7,280,256	46.758,382
Iron ingots	ton	107,370	4,064,039	90,885	2.939,144
Lead	lb.	387.411,588	50,076,822	442,542,820	58.990,957
Magnesium and calcium	—	———	5,295,840	———	4,576,024
Molybdenite (M_oS_2)	lb.	323,907	215.527	875,000	534,000
Nickel	lb.	287,385,777	160,430,098	319,983,340	180,196,300
Palladium iridium, etc.	fine oz.	16,018	7,495,409	176.528	7,494,809
Platinum	fine oz.	137,545	12,550,981	149,145	12,505,758
Selenium	lb.	262,346	1,101.854	368,800	1,844,000
Silver	lne oz.	28 299,335	23,774,271	31,541,757	26,261,667
Tellurium	lb.	4,694	8,215	7,200	12,600

	Unit of measure	1953		1954	
		Quantity	Value	Quantity	Value
OTHER NON-METALLICS (Concluded)			$		$
Tin	lb.	1,092,228	581,746	390,000	226,200
Titanium ore	ton	9,294	800,085	7,500	17,312
Tungsten (WO_3)	lb.	2,446,028	5,689,160	2,000,732	3,596,387
Zinc	lb.	803,523,295	96,101,386	747,718,334	89,277,569
Total Metallics	—	———	708,880,758	———	763,428,741
NON-METALLIC FUELS					
Coal	ton	15,900,673	102,721,875	14,825,000	96,078,000
Natural Gas	M. cu. ft.	100,985,923	10,877,017	122,854,500	12,683,200
Peat	ton	———	———	———	———
Petroleum, crude	bbl.	80,898,897	200,582,276	95,480,100	245,995,500
Total Fuels	—	———	314,181,168	———	354,756,700
OTHER NON-METALLICS					
Arsenious oxide	lb.	1,403,740	56,150	443,900	18,800
Asbestos	ton	911,226	86,052,895	966,883	93,079,931
Barite	ton	247,227	2,220,292	222,519	2,160,469
Diatomite	ton	103	12,150	104	12,168
Feldspar	ton	21,246	347,164	15,439	307,741
Florspar	ton	88,569	2,670,585	120,078	3,011,938
Graphite	ton	3,466	366,528	1,626	165,000
Grindstones	ton	15	900	15	2,100
Gypsum	ton	3,841,457	7,399,884	3,957,268	7,054,036
Iron oxides	ton	10,308	195,801	5,799	181,073
Magnesitic-dolomite and brucite *	—	———	3,056,392	———	4,008,678
Mica	lb.	2,265,128	161,128	1,503,229	90,479
Mineral waters	gal.	309,585	165,484	310,000	165,150
Nepheline syenite	ton	113,345	1,576,271	120,484	1,740,000
Peat moss	ton	81,654	2,643,019	87,257	2,986,961
Perlite	ton	1,112	11,120	———	———
Quartz	ton	1,785,574	2,070,617	1,742,951	1,589,254
Salt	ton	954,928	6,974,501	962,458	8,506,929
Silica brick	M	3,720	712,271	2,143	474,635
Soapstone and talc	ton	27,408	285,755	25,691	301,958
Sodium sulphate	ton	115,565	1,681,258	165,521	2,547,586
Sulphur	ton	358,850	3,172,698	503,237	4,540,463
Titanium dioxide	ton	100,527	4,206,496	82,386	3,680,077
Total Other Non-metallics	—	———	126,039,359	———	136,625,426
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS					
Clay products (brick, tile, etc.)	—	———	29,777,731	———	31,520,243
Cement	bbl.	22,238,335	58,842,022	22,552,788	59,405,097
Lime	ton	1,228,760	14,484,013	1,217,343	14,333,152
Sand and gravel	ton	101,033,949	53,485,401	105,430,550	56,884,521
Stone	ton	19,849,017	30,613,051	34,212,319	37,242,580
Total Clay Products and Other Structural Material	—	———	187,202,218	———	199,385,593
GRAND TOTAL			1,336,303,503	———	1,454,196,460

* Includes some magnesium metal.

Note: The above figures do not include data for pitchblende products.

Nickel Production at Highest in 1954

New Peaks Expected in 1955

NICKEL production by the free world in 1954 will reach an all-time high estimated at 390,000,000 pounds, or approximately 50 per cent higher than the pre-Korean 1949 output, Dr. John F. Thompson, chairman of the board of directors of The International Nickel Company of Canada, Limited, stated in a review of the nickel industry. The 1954 production is 50,000,000 pounds higher than the free world output in 1953. Much of this increase was assisted by government premium prices.

"It is expected," Dr. Thompson said, "that over-all production by Canadian producers will surpass any previous year and will approximate 320,000,000 pounds, accounting for over 80 per cent of the free world's total. In 1953, Canadian nickel production totalled 286,000,000 pounds.

"Output of the metal by International Nickel from its own ores during the year will also set a record at about 275,000,000 pounds," he continued. "This high nickel production has been made possible by reason of the completion of certain mining and metallurgical developments climaxing years of planning and research and of the progress made in Inco's underground mining expansion program.

"Government stockpiling acquisitions in 1954 absorbed much of the increase in world production and also required increased diversions from industry. On the other hand there was a lessened demand upon industry for defence production. The over-all result was that the supply of nickel to industry for civilian applications was improved. Although progress was made in 1954 in improving the position of civilian users of nickel, complete satisfaction of civilian requirements was still not possible under the prevailing governmental defence and stockpiling schedules.

Price Increased on Nov. 24

"To assist in offsetting higher production costs, The International Nickel Company of Canada, Limited, on November 24, increased its price of refined nickel by 4½ cents (United States) per pound. Like increases were also made by the company's United States subsidiary, The International Nickel Company, Inc., and its United Kingdom subsidiary, The Mond Nickel Company, Limited. This brought the export price of electrolytic refined nickel, from the company's Port Colborne, Ontario, refinery, to 64½ cents (United States) per pound, including 1¼ cents United States import duty which is paid by the company. New price schedules were also announced for nickel and nickel alloys in the form of mill and foundry products produced at the plants of its United States and United Kingdom subsidiaries."

Dr. Thompson said that deliveries of metallic nickel by International Nickel to the United States Government at the rate of 2,000,000 pounds monthly were begun in January, 1954, under the terms of a contract signed in May, 1953, with the Defence Materials Procurement Agency. "Deliveries will total 120,000,000 pounds of nickel in the five-year period ending in 1958," he continued. "These are in addition to the amounts of nickel otherwise provided by the company to the United States stockpile.

"In September, announcement was made of the signing by International Nickel of a contract with the General Services Administration of the United States Government to refine certain nickel concentrates produced by Sherritt Gordon Mines Limited. The contract calls for the delivery of 4,500,000 pounds of refined nickel in the period ending August, 1955. Performance of this contract is in addition to the scheduled maintenance of International Nickel's present increased annual production rate of 275,000,000 pounds of nickel.

Civilian Applications

"As has been the situation for some years, civilian applications for nickel during 1954 were influenced by the diversion of large quantities of the available supply for military, atomic energy and stockpiling requirements. The amounts of nickel available to civilian industry again limited the full realization in proven fields and the efforts of development work on new applications.

"The steel industries of the United States, the United Kingdom and Canada continued during 1954 to utilize the largest proportion of the primary nickel distributed to industry, principally for the production of stainless steels, engineering alloy steels and jet engine alloys.

"Production of the chrominum-nickel stainless steels in the United States in 1954 is estimated to have been about the same as in the previous year, although total output of all types of stainless steels is expected to be below the record high attained in 1953. Chromium-nickel stainless steels continued to be employed extensively by the aircraft, architectural, chemical, food processing and petroleum industries because of their superior resistance to heat and corrosion, good appearance and ease of fabrication. Many manufacturers in the architectural, appliance and utensil fields have returned to the use of these nickel-containing steels since the lifting, late in 1953, of governmental restrictions which had prohibited their application in these consumer fields.

Less Used by Steel Industry

"It is estimated that the amount of nickel employed by the steel industry in the production of engineering alloy steels during the year was less than in 1953. In many heavy duty uses, the old established steels of higher nickel content have, to an appreciable extent, replaced those emergency steels adopted during the period of government controls. Established applications, such as in aircraft, trucks, farm and road building equipment, power generation machinery and railroad equipment, again were responsible for a large portion of the consumption of these nickel-containing steels.

"Alloys containing high percentages of nickel, such as the Nimonic and Inconel groups, continued to retain their pre-eminence in the field of aircraft gas turbines and jet engines. These alloys, produced by International Nickel at its plants in the United Kingdom and the United States, are employed in many components of modern jet engines because of their strength, ductility and resistance to heat and corrosion. Monel, a nickel-copper alloy, was again employed throughout industry for a wide variety of corrosion-resisting equipment, and Incoloy for applications where resistance to heat and oxidation at moderately elevated temperatures is essential.

"Although the nickel-plating industry received more nickel in 1954 than in

1953, supplies available for the industry continued to fall short of the demand. This was primarily due to the need for heavier nickel deposits to insure quality electroplated products. A new process involving the chemical deposition of nickel to produce a uniform deposit over complex sections in supplementing the use of electrodeposited coatings for the protection of fabricated parts difficult to plate electrolytically. Extensive plating installations established for the processing of large atomic energy equipment are expected to become more widely applied for commercial use. These developments should considerably enlarge the scope of plated products.

Other Uses

"The nickel silvers, a group of copper-nickel-zinc alloys, containing up to 18 per cent nickel, remain the preferred base metal for silver-plated articles. Applications for these alloys in costume jewelry slide fasteners, fishing equipment and other markets have increased with the improvement in their availability since the lifting of government restrictions.

"Production of cupro-nickel alloys, containing 10 to 30 per cent nickel, showed an increase during 1954. These alloys continued to play an important part in the marine, power and petroleum industries where they are employed in the form of tubing and tube sheets for heat exchangers which operate under severe conditions of temperatures and pressures.

"Although the total tonnage of nickel-chromium alloy castings produced during 1954 was less than in the previous year, the average nickel content of these alloys showed an increase which accounted for approximately the same amount of primary nickel being consumed by this industry as in 1953. The principal application for these alloy castings remained in the heat-treating furnace field and for services involving resistance to corrosion. Experimental work with stationary and mobile gas turbines shows promise of developing a new market for nickel-chromium castings.

"During 1954 production of Ni-Resist, the corrosion-resisting nickel cast iron, showed an increase. This alloy is used predominantly in components of equipment to resist corrosion, heat and wear. Ni-Hard, the abrasion-resisting nickel-chromium cast iron, was used more extensively by the mining industry, principally in grinding the taconite ores of the Mesabi Range in the United States. Another important application for this material is in grinding balls for the paint and cement industries.

Nickel Outlook

In conclusion Dr. Thompson said: "Based on available information it is estimated that free world nickel production in 1955 should approximate 415,000,000 pounds. It is expected, after satisfying defence requirements and deliveries to government stockpiles under present schedules, more nickel will be available to free world industry for civilian applications in 1955 than was the case in 1954."

ADMINISTRATION CHANGES MADE BY BRITANNIA M. AND S. COMPANY

Top level changes in administration have been announced by Britannia Mining and Smelting Co. following retirement of A. C. Munro as general superintendent of mills. T. M. Waterland, who has been in charge of all mining operations since 1947, is appointed assistant manager; L. L. Allan, mine superintendent; W. G. Hatch, mill superintendent; James M. MacIntyre mechanical superintendent; A. T. Smith and Paul Billwiller, assistant mine superintendent; Roderick Blundell, general mill foreman; and Peter Jack, metallurgist.

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Year of Steady Development Reported By B.C.-Yukon Chamber's President

THE year 1954 was one of steady development, and it is possible to look forward to 1955 with an optimism tempered only by a realization of our dependence on world trade, said Harry V. Warren, in his presidential report to the 42nd annual meeting of the British Columbia and Yukon Chamber of Mines. The impression that all the good things in mining belong to Eastern Canada is far from correct and they could look back upon mining and petroleum developments in the past year with great satisfaction. Mr. Warren continued:

Mentioning that the Chamber had had to vacate its office premises at 790 Dunsmuir Street, but had succeeded in acquiring excellent accommodation at 675 Dunsmuir Street, Mr. Warren proceeded:

What were the highlights of 1954? Not necessarily in order of merit, I would list the following.

(a) The continuing expansion of the Consolidated Mining and Smelting Company's giant enterprise; its new Waneta Power Plant, its increased facilities at Trail, Kimberley, and Yellowknife, and its further preparations for eventual production at Pine Point, are all indicative that "Smelters" has faith in the future of Western Canada.

(b) Alcan's announcement of further substantial development and B.C. Electric's new hydro undertakings, both coming almost before the cement of earlier work had time to set, both reflect a substantial optimism for the days that lie ahead.

(c) Our newest British Columbian discoveries, Cassiar Asbestos and Grand Duc, both appear to be responding most favorably to development, and only at Western Nickel have results been disappointing.

Steady Progress in the Yukon

(d) In the Yukon progress has been steady. Before long we may expect to see new names appearing among the lists of Canada's producing mines. Hudson Bay Mining and Smelting Company's Kluane Lake, Prospector's Airway's Pelly River, and American Smelting and Refining Company's Hyland River showings from available reports all appear to have responded well to further work. Other exploration companies such as Berens River, Conwest, and Northwestern Explorations have been active in the search for new mines and some worthwhile discoveries have been made. We may hope to hear more about these in 1955.

(e) On top of all this progress in the north we have learned something of our government's plans for new road construction in that part of the world. Already a start has been made in linking Cassiar Asbestos with Stewart by way of Telegraph Creek. There appears to be good reason for hoping that a portion of this road should, before long, become a part of a Hazelton-Atlin road —a road which only a few years ago was not even a gleam in the eyes of our chief engineer.

(f) More natural gas and some petroleum have been found in British Columbia's Peace River Block, and at last it looks as if we could really look forward to Central and Southern British Columbia having natural gas, which in due course should greatly stimulate industrial mineral development in B.C. Already at Fort Saskatchewan we see a new industry based on nickel springing up because of a successful marriage between natural gas and mineral production.

(g) The extension both north and south of the P.G.E. should act as a spur to mineral exploration.

(h) Particularly encouraging has been the continuing good news of copper output, albeit as yet on a modest scale, from Vancouver Island.

Tribute to Older Companies

(i) I would be greatly remiss if because of all these new developments I did not pay tribute to those who have for so long been "bearing the heat and burden of the day" and have thereby provided the backbone of our mineral industry. I refer to the Britannia and Granby Mining and Smelting and Canadian Exploration Companies and to Torbit Silver Mines, Mineral King, Sunshine Lardeau, Silver Standard, Giant Mascot, and others perhaps less well known who have maintained their crews and continued to improve their mining and milling techniques. I refer also to our long suffering but important gold mines, our silver mines at Mayo and Beaverdell, and our all too seldom remembered coal and industrial mineral mines. One well known name — Island Mountain Gold Mines Limited — has passed from the picture, having liquidated its assets which are now held by the Cariboo Gold Quartz. However, it is good to be able to report that Newmont —who formerly controlled Island Mountain — has faith in Canada that the assets obtained by this liquidation are being maintained in Canada for exploration purposes.

(j) One triumph of constructive optimism must be mentioned. Mineralization on the Deerhorn Property in Tweedsmuir Park is being explored by means of two adits. Gold is vital in this property, and new gold exploration and development are rare enough these days to merit attention and good wishes.

(k) Perhaps the days of an iron smelter are not too far away. Not only have the Argonaut and Texada Mines shipped ore to Japan, but scouts of more than one major mining company have been examining iron prospects and assessing their possibilities during the past two years.

Search for Uranium Continuing

(l) Reference must be made to efforts being made to discover uranium in British Columbia and the Yukon. Large numbers of prospectors have equipped themselves with Geiger Counters and it is pleasing to be able to report, in the manner of Sir Winston Churchill, that their efforts "have not been without a measure of success".

Unfortunately over all hangs the uncertainty of taxation. Governments are always looking for money. The mining industry expects to pay its fair share of taxes, but it does not wish to see the hazards which are peculiar to the mining industry go unrecognized. The mining industry does not wish to have the idea of "ability to pay" thrown out of the window, and it would like to see mining companies who operate most efficiently be allowed to reap at least a fair measure of their just awards.

It is to be hoped that our present governments will co-operate to an increasing extent with the mining industry, realizing not only the significance of the fable of the goose and the golden eggs, but also the fact that the mining industry has problems, such as exhaustibility and unpredictability, peculiar to itself and that it must be treated on its own merits if it is to prosper and continue to play its part in the future development of British Columbia as it has done so magnificently in the past.

Sherritt Gordon Mines, Limited, is making improvements and extensions to its Fort Saskatchewan nickel-leaching plant to increase production capacity.

The U.S. Bureau of Mines is soon to embark on its first overall census of the nation's mineral industries since 1939.

Con. Discovery Yellowknife Triples 1954 Estimated Profit

OPERATING performance and profits for the year 1954 exceeded forecasts by a very substantial margin. The following are the highlights as presented in a recent report by J. C. Byrne, president and general manager.

1. Estimated net profit of $725,000 was almost three times the 1953 net of $272,845.00.

2. Average grade of ore milled was 1.54 ounces, $54.00 per ton at $35.00 gold.

3. Cost per ounce produced averaged $22.48 and dropped to $18.00 per ounce in the last quarter.

4. Ore reserves doubled and grade increased; estimated four years reserve with structure continuing strong and vein widths increasing.

Production for the year was 56,375 ounces of gold, valued at $1,922,900, from 37,389 tons milled. Estimated operating profit was $1,100,000 and net profit $725,000, equal to 26.4 cents per share. Dividends disbursed amounted to 15 cents per share.

Estimated cost aid for the year was only $91,000 or $1.92 per ounce due to the low cost per ounce of gold produced. The company was not eligible for cost aid in the last quarter of 1954 as cost per ounce produced dropped to $18.

December production was excellent at 6,929 ounces of gold, valued $235,000, from 3,162 tons milled. Ore to the mill averaged 2.22 ounces, $77.70 per ton at $35.00 gold and recovery was 98.53 per cent.

HENRY E. DOELLE, NEW PRESIDENT OF B.C. MINING ASSOCIATION

Henry E. Doelle, managing director of Sheep Creek Gold Mines Ltd., was elected president of the Mining Association of British Columbia at the annual meeting January 29, succeeding E. C. Roper, general manager of Britannia Mining & Smelting Co. Ltd.

L. T. Postle was elected mines vice-president, and E. "Ted" Simpson coal mines vice-president.

Charles H. Mitchell, secretary of the Mining Association of British Columbia, is leaving that position to become executive secretary of the British Empire Mining Conference t beo held in Canada in 1957.

NEW OFFICERS OF B.C. SECTION OF C.I.M.M.

Dr. W. H. White, of the University of British Columbia, has been elected chairman of the B. C. Section, Canadian Institute of Mining. T. M. Waterland, Britannia Mines, and U. S. Annett, Canadian Industries (1954) Ltd., are the new first and second vice-chairmen. Arthur O. Hall, of American Smelting and Refining Co., was elected chairman of the Vancouver branch of the C.I.M. E. C. Roper, general manager of Britannia Mining and Smelting Co., is the new president of the Mining Association of British Columbia. He succeeds M. M. O'Brien, vice-president and managing director of Bralorne Mines Ltd.

The month of March is Red Cross month. Your Canadian Red Cross needs $5,494,100 in 1955.

The Canadian Red Cross canvasser is a volunteer. You also serve by giving.

LEITCH

GOLD MINES LIMITED

(No Personal Liability)

Authorized Capital

3,000,000 Shares – 2,912,505 Issued

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Dr. J. H. C. McClelland, Vice-Pesident
W. W. McBrien, Secretary-Treasurer
F. E. Hall, Assistant Secretary

J. Russell Cryderman, Director
S. H. Robinson, Director
John D. Barrington, Director
G. A. McKay, Mine Manager

Transfer Agents: Chartered Trust Co., Toronto, Ont.

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Mine Office
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NEW DICKENSON MINES LIMITED

Authorized Capitalization ..... **3,750,000 shares**
Issued ..... **2,750,200 shares**

Par Value One Dollar

The company spotted its first drill hole January 22nd, 1945; poured its first gold bar January 22nd, 1949; paid its first dividend February 2nd, 1954. Total dividends paid in 1954 amounted to $550,021.15.
From commencement of production to the end of November, 1954, the company has milled 528,994 tons of ore and grossed $9,464,132.

DIRECTORS:

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NEW DICKENSON MINES LIMITED
145 YONGE STREET TORONTO, CANADA

Mining in Canada

Cariboo Gold Quartz Mining Co. Ltd.

Net operating profit of $25,000 was reported for November by Cariboo Gold Quartz Mining Co., compared to an operating loss in November of 1953. Officials report the gain resulted from improved operating efficiency; increased availability of dependable long-term ore sources in the old Rainbow and the new Lake area ore zones; and the almost overnight increase of 100 tons daily in the milling rate which followed outright purchase of the mine workings of Island Mountain Mines Co. Ltd. in mid-August.

A. B. Burnett, president, said the average cost of producing one ounce of gold in November was 12 per cent less than the average cost for the year ended Jan. 31, 1954. He added that further reduction in costs is expected in the period ahead as a larger proportion of mill feed is drawn from the wider, higher grade stopes, and as the milling rate is further increased.

The mill averaged 321 tons daily in November, 1954, compared with an average of 233 tons daily for the 10 months ended Nov. 30, 1954. Mill heads in November were 0.43 oz. per ton compared with 0.41 oz. per ton for the 10 months and 0.36 oz. per ton in the 12 months ended Jan. 31, 1954.

Plans call for increasing the tonnage gradually to full capacity of the mill which is between 360 and 370 tons daily. At moderate cost, management believes the present plant could be put in condition to handle 400 tons daily. On Nov. 27, the mill demonstrated that it could handle 382 tons in 24 hours without detriment to the percentage of gold recovered.

Jackson Basin Mining Co. Ltd.

Recent increased financing by Jackson Basin Mining Co. will be augmented by proceeds of development ore from a high grade silver-lead occurrence being developed at the company's property near Sandon in the Slocan mining district. This ore has been picked up in a raise at 35 feet above No. 6 level and was found to be continuous for 115 feet on the slope of the vein to Nov. 5 level. A sub-level has been started about half way between the two levels.

B. I. Nesbitt, director and consulting geological engineer, said there were known good showings in addition to the orebody under development. The main program in 1955 will be to explore these showings and to look for others with the aid of a geophysical survey, he said. The property is within two miles from the high grade Violamac operation and a similar distance from other well known Slocan properties.

Cowichan Copper Company Limited

Initial diamond drilling to test downward extension of the main orebody at Cowichan Copper is described as very successful by O. G. Macdonald, president.

(Continued on page 57)

Westeel Products Ltd. Celebrates 50th Anniversary This Year

William S. Sparrow

IT IS appropriate that in an issue of PreCambrian reviewing the progress that has been made by the mining industry in the year just closed, and that assesses the prospect for the year ahead, attention should be called to the fiftieth anniversary of a Canadian industrial firm whose activities touch the mining industry at many points.

It was 50 years ago that the Canada-wide organization today known as Westeel Products Ltd was established. The story of its rapid progress during that period is told by William S. Sparrow, vice-president, western division, who has given more than 29 years of service to the firm. He joined the business as secretary in 1926, became assistant secretary-treasurer in 1937 and manager western division in 1941. In 1953 he was appointed vice-president. History of the firm's "50 years of progress through service" is related by Mr. Sparrow as follows:

In 1905 construction was booming in the Canadian West. It was the beginning of an epoch in Canada's history which saw the virgin prairies being turned into farms and become "the granary of the world." In this half century population increased and multiplied and great cities grew up in pace with this development.

Far sighted business men were anticipating a period of expansion in the West. One of them opened a small plant on the banks of the Red River to fabricate sheet metal products. This was the beginning of what is now the Canada-wide organization known as Westeel Products Limited. Then it was named the Winnipeg Ceiling and Roofing Company. Its success was immediate. It did not remain a small plant for long. The boom was on.

Outgrowing its original premises, the plant was moved and enlarged; new machines were installed, and an ever increasing variety of articles produced to fill the requirements of customers in practically every field of endeavor.

Beginning in 1919 with the opening of a branch plant in Regina, a period of rapid expansion opened up for the Company, culminating with the founding of its most westerly branch in Vancouver in 1925. The name of the firm was changed to Western Steel Products Limited in 1920, and in that year two additional branch plants were established in Alberta at Calgary and Edmonton. Another Saskatchewan branch was opened in Saskatoon in 1922. The firm name was again changed, in 1945, to Westeel Products Limited, an all-Canadian, Canada-wide organization operating from coast to coast.

Today, the products of Westeel in some way touch the lives of almost every man, woman and child in Canada. Building products made from sheet metal are used in homes, schools, hospitals, churches, offices, factories, warehouses, barns, implement sheds, rinks and granaries. Other products include ventilators, eavestroughs, lockers, shelving, partitions, culverts, road signs, well curbing, stock troughs, truck and storage tanks, etc.

Westeel now enters its second half century with confidence that the business achieved since 1905 will be continued and deserved because of the high quality of service which has become a tradition with this enterprise.

The first hole started in ore and was into it on the slope of the ore zone for 125 feet before entering hangingwall volcanics. Assays indicate an average of 10 per cent copper down to 85.6 feet with assays from the balance of the core which was in ore unreported, Mr. Macdonald said.

The second depth hole was to be directed to cut the downward projection of the ore zone at slope depth of 260 feet and from a station 120 feet south of No. 1 hole. A third hole was planned from a station 220 feet south of the first to cut the zone 371 feet below the level. This program is expected to provide adequate information in advance of starting a new low level adit about 210 feet below the present low level which is at 1,200 ft. elevation.

In the first depth hole the first 9.3 feet of core averaged 16.6 per cent copper with further sections assaying as follows: 10.7 ft. 15.65 per cent; 8.6 ft. 13.55 per cent; 4 ft. 30.95 per cent; 3.9 ft. 1.15 per cent; 20 ft. of porphyry, no assay; 2.8 ft. 4.95 per cent; 4.2 ft. 10.40 per cent; 4.5 ft. 7.55 per cent; 1.5 ft. 1.05 per cent; 9.6 ft. 2.8 per cent.

Rico Copper Mines Limited

Diamond drill holes No. 21 and 22 at the Rico Copper property near Chilliwack in the Cheam Mountain range obtained copper ore intersections in Zone "B" at about 200 feet below the impressive surface outcrop. The ore in Hole No. 21 was reported to average 1.9 per cent across three feet or 1.65 per cent across four feet. The Hole No. 22 intersection was stated to have penetrated ore for 48 feet averaging 1.4 per cent copper. The last four feet of the ore section averaged 8.7 per cent copper and 6.4 oz. silver per ton.

Giant Mascot Mines Limited

Record profit of $67,800 was earned by Giant Mascot in December from 17,110 tons milled. In Novmeber from 15,812 tons operating profit was $50,-240. The previous high was $54,261 in October.

Bralorne Mines Limited

Output of 15,704 fine ounces of gold from 46,032 tons milled for an average of 0.34 oz., is reported by Bralorne Mines Ltd. for the final quarter of 1954. This compares with 15,496 oz. in the preceding quarter from 43,237 tons, an average of 0.36 oz. In the final quarter of 1953 Bralorne milled 44,511 tons for recovery of 15,877 oz., an average of 0.35 oz. per ton.

Drifting on the "77" vein on 28th level was described as very promising in the official quarterly report. Additional ore was developed both on 77 and 79 veins on this level. On 27 level a crosscut to 77 vein cut ore of good grade. The 26 level east on 77 vein was continued toward the Pioneer mine and ore was encountered on which the drift is being continued. The crosscut on 20 level at last report was about 400 feet inside the Taylor (Bridge River) property in good ground. Visible gold was seen in the 2002 drift southwest off the crosscut but was too narrow to make ore.

Sunshine Lardeau Mines Limited

Net profit of $58,231 was earned by Sunshine Lardeau Mines Ltd. in the two months of November and December. The silver-lead-zinc operation in the East Kootenay district is managed by Berens River Mines Ltd., a Newmont Corp. subsidiary.

John Dryborough, president, said ore reserves in No. 4 vein would last only past the middle of 1956 and warned that other ore indications on the property must be proven and developed well in advance of that time. Most promising, he said, were No. 4 vein below 10 level and the parallel Eclipse vein. If further drilling below 10 level gave encouraging results, a shaft would be sunk and one or two levels driven. Following diamond drill results on Eclipse vein which showed material looking like ore from No. 4 vein, a crosscut is being driven which should reach the vein early in May.

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Men... IN MINING

OFFICERS OF B.C. AND YUKON CHAMBER OF MINES FOR 1955

S. J. CROCKER

New president of the B.C. and Yukon Chamber of Mines is S. J. Crocker, of the B.C. Equipment Co. Ltd., who succeeds Dr. H. V. Warren of the University of B.C., Henry L. Hill, consulting mining engineer, was re-elected vice-president at the annual meeting in Vancouver, and J. A. Pike of Berens River Mines Ltd. was elected vice-president after service on the chamber committee. Appointed to the executive committee were: Ulric S. Annett, Dr. W. B. Burnett, Charles M. Campbell, Harry O. Dyer, G. S. Eldridge, Archie D. MacGillivray, T. S. Mackay, Joseph T. Mandy, B. I. Nesbitt, M. M. O'Brien, Christopher Riley, John D. Rochfort, Matthew Sutton, Kai Wohlleben and L. F. Wright.

ENGINEERING INSTITUTE PRESENTS THREE LIFE MEMBERSHIPS

Presentation of life memberships to three Edmonton engineers featured a recent dinner meeting of the Edmonton Branch of the Engineering Institute of Canada. These honored were M. L. Roblin, district engineer for the Canadian National Railway, J. W. S. Chappelle, consulting engineer, and Fred V. Seibert, consulting engineer.

Ninety people attended the meeting, which was addressed by the supt. of the Steel Company of Canada, John J. Carey, of Hamilton, Ontario. His subject was "A Metallurgical View of Steel Problems."

R. B. CAMPBELL NAMED RESIDENT GEOLOGIST IN THE YUKON

The Geological Survey of Canada is establishing a permanent office at Whitehorse, Yukon, and R. B. Campbell, who has been with the Survey for many years, has been appointed resident geologist. Most of his field work has been done in the Yukon. Mr. Campbell is a graduate of the University of British Columbia and of the California Institute of Technology.

LONGYEAR CO. APPOINTS DR. PHILLIP MERRITT AS SENIOR GEOLOGIST

E. J. Longyear Company, Minneapolis, announces the appointment of Dr. Phillip L. Merritt as senior geologist to initiate consulting services in the Company's New York offices in the Graybar Building.

Dr. Merritt has been assistant director of the Raw Materials Division of the Atomic Energy Commission since its inception. In this capacity, he directed the Commission's uranium exploration program.

He is a University of Minnesota graduate, obtaining his doctor's degree at Columbia University, following which he spent some time in helping to open up the great Northern Rhodesian copper deposits. Thereafter, he served as a consultant to the Government of Colombia and later conducted mineralogical studies for the American Cyanamid Company.

With the inception or research on the first atomic bomb, he was commissioned in the Corps of Engineers where he served on the Manhattan project with distinction until the formation of the Atomic Energy Commission. For his contribution to the Manhattan project, he was awarded the Legion of Merit.

Dr. Merritt is a member of the Geological Society of America, American Institute of Mining and Metallurgical Engineers, the Society of Economic Geologists and the Mineralogical Society of America. He belongs to Sigma Xi and Gamma Alpha scientific societies, and is also a member of the Columbia University Club.

HOPKINS EXPLORATION CONSULTANTS MOVE TO LARGER QUARTERS

ALBERT HOPKINS

Hopkins Exploration Consultants have removed their head office to larger quarters at Suite 607, 320 Bay Street, Toronto 1. Percy E. Hopkins is senior consultant, Albert Hopkins managing director, and Frosty Ennis, general manager. They now have a secretarial staff of seven, three draftsmen, and nine fieldmen, with branch offices at Algoma Mills, Ontario and Uranium City, Saskatchewan. Additional offices are planned at Kenora, Ont., Vancouver, B.C., Bathurst, N.B., New York City, Grand Junction, Colo., and London, England.

The towering 637-foot chimney being constructed for International Nickel's new iron ore recovery plant near Copper Cliff, Ontario, will weigh 17,000 tons.

INDUSTRIAL TOPICS FOR... MINING MEN

GARDNER-DENVER AND KELLER TOOL CONSOLIDATED

Managements of the Gardner-Denver Company, Quincy, Illinois, and of the Keller Tool Company, Grand Haven Michigan, have announced that the stockholders of both companies have approved a consolidation. Keller Tool Company now becomes the Keller Tool Division of Gardner-Denver Company and will continue operations under the former Keller management.

E. V. Erickson, president of Keller Tool Company, has been elected an executive vice-president of Gardner-Denver Company; Gifford V. Leece remains as president of the Gardner-Denver Company.

Mr. Erickson has been a director of Keller Tool since 1940, was vice-president and general manager from 1941 to 1951, and has been the president of Keller Tool since December, 1951. He is a director of the Grand Haven State Bank and of Eagle-Ottawa Leather Company.

Gardner-Denver Company was established in 1859, and now manufactures a complete line of centrifugal and reciprocating pumps, portable and stationary air compressors, rock drills and mountings, air tools for contractors and plant maintenance, and other pneumatic equipment. Gardner-Denver products are widely used throughout oil field, mining, construction and manufacturing industries. Its principal plants are in Quincy and in Denver, Colorado, with other manufacturing plants in La-Grange, Missouri, in Canada, and in South Africa.

The Keller Tool Division, with two manufacturing plants in Grand Haven, and one in Reed City, Michigan, manufactures portable pneumatic tools for the automotive, aircraft, electronics, appliance and other industries. The principal Keller products include compressed air operated drills, screwdrivers, nut setters, ratchet wrenches, "Airfeedrills," hoists, grinders, "Wire-Wrap" tools, and chipping and riveting hammers.

Sales activities of the two companies will be co-ordinated to provide expert compressed air service, and a complete line of products to the customers and prospects in each of the industrial fields formerly served by either company. For example, a complete compressed air installation engineered by the new organization can include the proper size and type of air compressor as well as a complete line of drills, air tools, and other pneumatic equipment for use throughout the installation.

DIAMOND DRILLING AGENTS FOR LONGYEAR AND J. K. SMIT, LTD.

Diamond Drilling Supplies Ltd., under the management of Donald J. Macdonald, 618 Oak Street, Winnipeg, have been appointed exclusive agents of Canadian Longyear, Ltd., and J. K. Smit Company of Canada Ltd. products.

This distributorship covers the mining areas of Western Ontario and Manitoba, the company acting as distributor and representative for the complete line of Longyear diamond core drills and drilling supplies and for the J. K. Smit diamond set drilling bits and shells.

HUGHES OWENS COMPANY MOVES TO NEW ADDRESS IN WINNIPEG

The Hughes Owens Company is now moving to new premises at 464 Hargrave Street, Winnipeg, after being in the Galt Building at 103, Princess Street, for well over forty years. The new and larger premises are planned to take care of expanding business. The new phone number 93-8694 with switchboard will handle all calls except the Reproduction Room 93-2922 or the Repair Department 93-7784.

A large retail store area off Hargrave Street, between Notre Dame and McDermot, will provide spacious displays for art and drafting materials as well as microscopes and optical equipment.

A parking lot with entrance off Dagmar Street provides spacious parking and easy access to the store, office or Reproduction room through the rear entrance.

The company, largly employee owned, has been operating in Canada for over half a century. Recent business expansion has taxed available space to the limit, a condition which will be alleviated in the new premises, both retail and wholesale accounts being benefited by the accommodation.

E. Jacobson, the Winnipeg manager, also a director of the company, has been with the Winnipeg office for twenty-six years.

FLYING LABORATORY SPEEDS WORK OF GEOLOGISTS

A group of Toronto scientists have developed a flying geophysical laboratory to help mining and oil industries find deposits of iron, oil, uranium, asbestos, titanium, copper, lead, zinc and nickel.

Three complex electronic devices, built for a Toronto survey firm, an airborne magnetometer, a scintillation counter and an electromagnetic detector, have been installed in a Canso flying boat. Technical difficulties hitherto have prevented installation of all three of these devices in on aircraft.

The magnetometer records variations in the earth's magnetic field, helping geologists in the search for iron, asbestos, titanium, copper and nickel. The scintillation counter indicates the presence of uranium in the earth. The electromagnetic detector can locate sulphide bodies that may contain copper, lead, zinc or nickel.

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A Dividend of one dollar ($1.00) (Canadian) per share has been declared on the Capital Stock of this Company, payable March 14, 1955, to shareholders of record at the close of business on February 11, 1955.
J. F. McCARTHY, *Treasurer.*

METAL MARKETS

Year of Dramatic Developments Better Than Predicted, with Prospects For First Half of 1955 Favorable

NEW YORK — Following twelve months of dramatic developments, the metal markets at the close of 1954 were in a stronger position than they were at the start of the year. On the whole, the year was a better one than many prognosticators had foreseen with most of the pessimistic predictions unrealized. In fact, copper, lead, zinc, aluminum and several other metals gained ground during 1954. For the coming year, the forecasts are generally favorable—at least for the first half.

Copper furnished many surprises last year. At the beginning of 1954, most industry sources were asking when the price would go down. By the end of the year, the query was reversed, with everyone wondering when the market would move up. It did not take long for the latter question to be answered as the domestic copper price climbed 3 cents late in January to 33 cents a pound. Producers were rather reluctant to boost their quotations, largely because of competition from aluminum and plastics, but the pressure finally became too great and the advance took place.

The various segments of the copper industry early last year had anticipated an oversupply of copper and acted accordingly. Producers curtailed their operations, in some cases going to a four-day week, and consumers dug into their inventories. Before the end of 1954, however, the mines and smelters were returning to six and seven-day weeks and fabricators were pleading for government aid in getting sufficient copper to prevent plant shutdowns. In the last quarter of 1954, the government diverted to hard-pressed consumers slightly more than 40,000 tons of copper that had been destined for the stockpile.

Factors responsible for the copper turnabout included severe strikes in this country and in Chile, which curtailed supplies; the U.S. purchase of 100,000 tons of Chilean metal and "sterilizing" it in the stockpile; and improved demand abroad, which resulted in less metal coming to the U.S. Domestically, the expected recession was not as extensive as had been predicted, and, by the year-end business was on the upswing, with copper among the materials to benefit.

Strikes and curtailments reduced the U.S. production of crude copper in 1954 by about 10 per cent. The 1954 total was 966,484 tons as compared with 1,067,793 tons in 1953, a drop of 101,309 tons. Output in 1954 was the smallest for any year since 1949.

At the end of December, 1954, stocks of refined copper held by producers came to 47,108 tons, an increase of 10,014 tons from the preceding month, but a decrease of 40,604 tons from the stocks at the end of 1953. World stocks of refined copper amounted to 228,637 tons at the close of last year, a drop of 139,605 tons from those at the end of 1953.

Domestic copper consumption also was lower last year, coming to 1,229,777 tons as compared with 1,375,869 tons in 1953, a drop of 146,092 tons. For all of 1954, the volume of business booked by fabricators totalled 1,195,441 tons against 1,271,178 tons in 1953, a decline of 75,737 tons.

Largely responsible for the tight copper supply situation in the face of reduced production and consumption was the slump in imports during 1954. Net copper imports (imports minus exports) are estimated at around 360,000 tons for 1954, compared with 558,000 tons in the previous year, a drop of nearly 200,000 tons. The domestic price rise in January was in part an attempt to prevent increased bypassing of the U.S. by foreign producers seeking more lucrative markets.

Greater production in the U.S. as a result of government-aided programs is expected to make an additional 135,000 tons of copper available in 1955. This should go a long way towards bringing about a balance between copper supply and demand, perhaps toward the middle of the current year. What will happen after that is anyone's guess.

Supplies and Price of Lead Better

THE lead and zinc markets last year followed a different path from that of copper. While increased imports were sought for copper, producers of lead and zinc fought to curtail shipments of foreign metal to the U.S. While copper consumers pleaded for metal to be diverted from the stockpile, government purchases of lead and zinc were bringing stabiltiy to the markets for these metals during the second half of the year.

Despite the fact that lead supplies last year substantially exceeded consumption (which was elow 1953), the average price of lead, thanks to an assist from the government, rose from 13.49 cents a pound in 1953 to 14.05 cents in 1954.

It will be recalled that the Administration launched its expanded stockpiling program for lead and zinc after rejecting the industry's pleas for higher import duties. In May, the Tariff Commission recommended boosting the duty on refined lead from the existing rate of 1.06 cents a pound to 2.55 cents, but President Eisenhower did not accept the decision. Instead, he pushed the button for the stock-piling speed-up.

Under the new program, the government was authorized to buy up to 200,000 tons of lead and 300,000 tons of zinc for the stockpile in the fiscal year ended June 30, 1955. Since the program got underway, the government has entered the market each month to siphon off about 10,000 tons of lead and 15,000 tons of zinc at the prevailing prices.

While domestic consumption of lead (primary and secondary) declined to about 1,090,000 tons in 1954, or about 9 per cent from 1953, improved demand abroad helped strengthen the position in the U.S. by attracting foreign lead which might have come here. U.S. net imports of lead for 1954 are estimated at 455,000 tons compared with 547,000 tons in 1953.

Refined lead output in 1954 came to 551,618 tons, compared with 533,883 tons in 1953, and was the highest for any year since 1950. Domestically-mined lead, however, was down to about 315,000 tons in 1954, 8 per cent below the 1953 level and the smallest since 1934. Secondary lead output showed little change, being estimated at 460,000 tons in 1954 compared with 480,000 tons in 1953.

Domestic shipments of refined lead in 1954 came to 475,552 tons, compared with 488,437 tons in 1953. Stocks of refined lead held by U.S. producers stood at 92,719 tons at the end of 1954 against 81,152 tons at the close of 1953. The government is estimated to have bought 100,000

tons during 1954 whereas little lead was acquired in the previous year.

As for the 1955 outlook, the lead price seems firmly established at 15 cents a pound and any change in the future is apt to be an upward one. The government is expected to maintain its stockpiling program at least through the first six months of the year. By then, Congress or the Administration is expected to come up with some plan to continue aid for the mining industry.

Stockpiling Strengthened Zinc Market

THE situation in zinc is comparable to that of lead in that government stockpiling served to strengthen the market in the second half of 1955. The government is reported to have acquired about 109,000 tons of zinc in 1954 (80,000 tons since August) and can, if it so desires, buy another 220,000 tons by the end of June of this year. These government purchases helped slice zinc stocks at producers from an eight-year high of 209,828 tons on May 31, 1954, to 124,077 tons on December 31, 1954.

Also serving to reduce the zinc supply available for consumption was the decrease in net imports to about 125,000 tons in 1954 from 217,000 tons in 1953. U.S. output of slab zinc totalled 868,247 tons for all of 1954 as compared with 971,191 tons in 1953, a drop of 102,944 tons or about 10 per cent. Production of zinc from domestic mines fell to 464,000 tons in 1954 from 547,000 tons in 1953 and, as with lead, was the lowest since 1934.

Slab zinc consumption in 1954 is estimated at about 863,000 tons, 12 per cent below the record amount consumed in the previous year. Zinc demand last year was adversely affected by the drop in defence orders at brass mills, curtailments by galvanizing departments of steel mills, and declines in die casting business. However, steel operations are now at the highest rate in more than a year and the auto industry is booming—which makes for a vastly improved market outlook. If continued government stockpiling and increased demand bring producers' stocks down to a more respectable level and the London market remains firm, a higher zinc price cannot be ruled out of the picture. Zinc currently is at 11.50 cents a pound after averaging 10.68 cents in 1954 and 10.85 cents in 1953.

Record Aluminum Production

ALUMINUM prices were advanced one-cent a pound last month bringing primary pig to 21.50 cents a pound and primary ingot to 23.2 cents. The boost climaxed a year of record production and peak shipments to customers. Output last year came to 2,921,174,443 pounds, an increase of 16.7 per cent above the 1953 total of 2,504,029,277 pounds. Government sources predict the aluminum shipments for civilian use will set another new high in 1955, with total consumption, both civilian and defence, totalling an estimated 3,200,000,000 pounds.

Silver Market Stable

SILVER continued to be one of the most stable metals in 1954. There has been no change in the price of silver for nearly two years and the market for this metal is expected to remain on an even keel, according to Handy & Harman, refiners and fabricators of precious metals. Consumption of silver in the arts and industries of the U.S. was about 85,000,000 ounces in 1954, about 19 per cent below 1953 and the lowest level of trade demand since 1941, but an improvement is expected in 1955, Handy & Harman said.

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Quicksilver Production Higher

DOMESTIC production of quicksilver continued to increase last year and was about 35 per cent higher than the 14,300 flasks turned out in 1953. Imports for the first nine months of 1954 stayed close to the 1953 high annual rate of 86,000 flasks. Industrial consumption dipped about 20 per cent from the 52,000 flasks used in 1953. The price of quicksilver rose to an all-time peak in 1954, more than 35 per cent above the $193 figure in the previous year. At this writing, spot quicksilver is quoted at a range of $325 to $327 a flask.

Cadmium Again in Oversupply

U.S. output of cadmium, a metal in oversupply for the third successive year, was estimated at 9,250,000 pounds in 1954, a drop of 5 per cent from the 1953 record production—and valued at $14,800,000. Consumption of primary cadmium declined 27 per cent to about 7,000,000 pounds, the lowest since 1948 and producers' stocks rose to 4,800,000 pounds at the year-end, a new high.

Demand for Titanium Growing

TOTAL production of titanium mill products in 1954 reached an estimated 2,598,300 pounds as compared with 2,227,500 pounds in 1953, reflecting steadily rising demand for these items in military applications. Fourth-quarter output of 768,566 pounds broke all prevous marks for any three-month period.

Increasing freight rates and shortage of dollars in Japan are closing off exports of iron ore from British Columbia to the Orient.

B.C. OWES MANY OF ITS ROADS TO MINING INDUSTRY

British Columbia owes a great deal of its road development work to the mining industry, Dr. Harry V. Warren, professor of mineralogy at the University of British Columbia, told the Vancouver section of the Historical Association.

Miners went into areas where nobody else would venture, he said. He cited the proposed road northward from Fort St. James to Atlin to serve the Granduc, Frobisher and Cassiar operations as an example.

ALL-CANADIAN

The Ungava iron ore development in Labrador, as difficult a project as building the Canadian Pacific Railway through the Rocky Mountains, was designed and built from start to finish by Canadian professional engineers, says Col. Tom Medland, executive member of the Ontario Association of Professional Engineers.

ATOMIC POWER BY 1960

Atomic power installations will be producing power economically early in the 1960s, Dr. G. C. Laurence, research director for chemistry and reactor engineering at the Chalk River, Ont., atomic energy plant, said in an after dinner speech to a gathering of scientists in Ottawa.

With the concentrator and ammonia plant at the $45,000,000 Sherritt Gordon Mines, Ltd., project moving into full production at Lynn Lake and Fort Saskatchewan an expanding market for fertilizers in the Pacific Northwest states is being developed.

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CAPITAL REPORT

by M. L. SCHWARTZ
Ottawa Corerspondent

Hints Of Things To Come

OTTAWA.—Of intense interest to Canada's mining industry is the forecast by a spokesman for the federal cabinet that the construction of railway lines would be "the greatest single development that could occur to speed the development of the north", where there are so many untapped natural resources.

"We have seen that railways are, and always have been, a decisive factor to the development of Canada", he said. "Can we hope for railway lines to, and in, the north? I am of the opinion that sooner or later railway lines will reach into the Canadian northland and I believe it will be sooner than later."

This spokesman for the cabinet made it clear that he was not urging a spree of railroad building in northern Canada, but he pointed out that "the solution of these problems when the appropriate time comes will, in my opinion, best be achieved by joining the initiative of private enterprise with planned government assistance, in much the same way that the construction of the transcontinental railways was accomplished."

The economic strength and the financial stability of Canada are greatly enhanced with every new northern development, he said, and by becoming more compact through our northern expansion and with increased population, trade and industry may be favoured with lower rates of transport, thus lowering production costs which, in turn, will place Canadian products in a better position to compete on the world markets. Now that Canada has attained nationhood and a feeling of maturity, it would appear to be appropriate for Canadians to give serious thought to the economic development and political integration of our northern heritage beyond the provinces, the Yukon and the Northwest Territories, the last frontier in America.

"The Northwest Territories and the Yukon are one of the great untapped sources of mineral wealth remaining in the world," he emphasized, adding significantly. "That the demand for these resources will be urgent, and will increase at an accelerating rate, few can doubt who have studied the Paley Report".

The key to the exploitation of these resources lies in the provision of adequate transportation facilities, he insisted. Despite water and air transportation facilities, "roads, costly though they may be, are required even for a relatively small development and railroads will be essential before the full potential of the region can even be remotely approached," he emphasized.

Considering that it is just about a year ago that the Canadian Government approved of legislation to promote measures for the economic and political development of the Northwest Territories and the Yukon, "through scientific investigation and technology", these words of a federal cabinet spokesman indicate—and this is all-important to the Canadian mining industry—that authorities in Ottawa are moving ahead more rapidly than had been expected to deal with the practical problems of developing Canada's northern areas, especially the most important problem of transportation.

Gold Mining Is In Unhealthy State

JUDGING from representations made by some mining groups, Canada's gold mining industry is not in a healthy state despite all the assistance given by the federal government. In fact, one provincial minister of mines said here that not only is this branch of the industry in an unhealthy state but that the fault is not Canada's, since it is the result of supranational economics.

"It is the result of the fact that the International Monetary Fund, which in the final analysis means the government of the United States, has not yet recognized that the $35 price for gold is no longer a realistic yardstick of its actual worth," he said, admitting at the same time that he did not know when the situation would be remedied.

Meanwhile, the latest word in official circles here is that gold production across Canada in the first three-quarters of 1954 dropped to 3,216,430 fine ounces in contrast to 3,235,723 in the corresponding period of 1953. Gold output in Ontario in this period fell to 1,735,601 fine ounces

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against 1,761,788 a year earlier; 808,939 in Quebec against 832,917; and 8,211 against 8,661 in Newfoundland and Nova Scotia. In the Prairie Provinces gold production advanced to 181,176 fine ounces against 165,904; to 209,992 against 203,104 in British Columbia; 47,237 against 45,008 in Yukon; and 225,274 against 218,341 in Northwest Territories.

In other words, in face of the approximately $14 millions paid as assistance under the Federal Gold Mine Assistance Act in 1953 in support of the gold mining industry, in contrast to the $12 millions in 1952 or $10 millions in 1951 or 1950, Canada's gold mining industry appears to be in an unhealthy state at present, a condition causing concern among gold producers and other backers of such operations.

Unity Among Engineers

R. F. SHAW, of Montreal, past president of the Quebec Corporation of Professional Engineers, told a meeting of several hundred professional engineers held here to "lay aside your slide rules" and seek means to "better serve the public through participation in government, defence and international affairs." He emphasized that the suggested co-ordination of engineering groups is designed to encourage the autonomy and strength of "technical societies" rather than to weaken them.

At the present time there are nine provincial associations and three engineering institutes.

"We can and must achieve national unity of purpose without undermining the rights and vigor of the member bodies," Mr . Shaw said.

Another speaker on the same occasion, J. Herbert Smith of Toronto, a past president of the 13,000-member Association of Professional Engineers of Ontario, also called for a new movement for national unity of engineers and stressed that such unity in the engineering profession is "as important in its field as was Confederation in the field of government."

More Mining Failures

According to an official source here, Canadian mining bankruptcies doubled in the first three-quarters of 1954, numbering 12 in contrast to only 6 in the same period of 1953.

In this period of 1954, Quebec accounted for 8 of these mining failures, Ontario and the Prairies for 2 each. In addition, January seems to have been the "big month" for such mining collapses as failures in this opening month totalled 5 and in the first four months of the year no less than 10 of the bankruptcies were reported.

Gatt And Mining

"IT is a popular pastime to attack the General Agreement on Tariffs and Trade or, what is worse, to damn it with faint praise," a spokesman for the Canadian government declared, adding, and this is significant to mining operators with exports involved in their operations, "most of this attack is based on ignorance, although some of it is based on a desire to see the world revert to restrictionism."

This top man in the Ottawa administration frankly admitted that the GATT is not a perfect document from Canada's point of view, and it has not always been observed as strictly by other countries as by Canada. "When everything has been said, however, it remains true that the GATT represents the only possibility of preserving the gains that have been made in the post-war period, the only possibility

of preserving a code of rules by which a country's trading practices can be judged," he remarked. "When people attack the GATT, I ask them for their alternative proposals and invariably they have none."

Then he stated Canadian government's policy regarding the GATT. "The Canadian government will strongly support the renewal of the GATT and the strengthening of the rules of trade," he said. "It will be fighting to preserve the gains that have been made in the form of lower barriers to trade in the post-war period."

News Roundup

PROF. H. H. STEWART, of Queen's University, Kingston, Ont., said in this capital that criticism of the curriculum of engineering schools is, at least, partly justified and teaching staffs have been aware of this shortcoming for some time, but efforts to correct the trouble "have not been world shaking." One of the biggest complaints is that graduates "lack culture" and most people feel the engineering graduates "should be able to take his place in the community." Another major problem faced by universities is the increasing number applying for admission to engineering courses, raising the question whether or not universities should expand. "Until such time as we can expand, we must have a quota system," he commented.

Mackay Meikle, 65, Chief of Development Services, Northern Administration and Lands, has retired after more than 25 years spent in the services of Canadian mining. Deputy Minister R. Gordon Robertson paid high tribute to him and his services to Canadian mining, particularly in the north. "His own work contributed much to the important field of northern development," Mr. Robertson said on the occasion of a presentation. There are few Canadians who know Canada's north more intimately, he said.

Another veteran of the Department of Mines and Technical Surveys, Sidney Holman, has now retired after more than 37 years of public service. A large gathering of coworkers and friends honored him. Dr. W. B. Timm, former Chief of the bureau and Director General of Scientific Services for the Department, now retired, came back to honor him.

Thomas Stanley Mills, 65, prominent in Canadian engineering circles, and who served for 37 years in the public service, retiring in 1949 as chief engineer of the Engineering and Construction Service of the Department of Mines and Resources, died at his home in the capital after an illness of several weeks.

H. George De Young, vice-president in Charge of Operations, Atlas Steels Limited, Welland, Ont., told a gathering here in the Physical Metallurgy Research Laboratories, Department of Mines and Technical Surveys, that operations on the continuous casting machine (first of its kind on this continent for the commercial pouring of steel), and of the new mills for the continuous production of stainless steel strip and welded tubing, have progressed to such a stage that wholly satisfactory products are now assured.

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MINERAL LAW TO DATE

By RICHARDSON, RICHARDSON, McLACHLAN & NORTON, Barristers and Attorneys-at-Law, Winnipeg, Manitoba

RECTIFICATION OF AGREEMENT RESPECTING OIL RIGHTS WHERE THERE IS A MUTUAL MISTAKE OF BOTH PARTIES:

Henderson and Henderson vs. Monreal Trust Company (Administrator of Murphy Estate) (1954) 11 W.W.R. (NS) 289 (Alberta).

The defendant was the administrator of the estate of the registered owner of a certain section of land. As a result of correspondence between the defendant and the plaintiffs and of interviews between the plaintiffs and the defendant's agent, a sale of the land to the plaintiff was agreed on. The only discussion respecting mines and minerals was a statement of the defendant's agent that the land was C.P.R. land and that the coal rights were reserved to the C.P.R. The only reservation in the defendant's certificate of title respecting mines and minerals was a reservation of coal to the C.P.R. In the transfer as prepared by the defendant's solicitors under the defendant's instructions to "complete transfer in favor of the purchasers and forward to us . . ." the only reservation as to the mines and minerals was the above-mentioned reservation to the C.P.R. for coal rights. Registration of this transfer was refused by the Land Titles Office because it purported to transfer an interest in mines and minerals and at the time mineral taxes were owing and also because an ordinary tax caveat was registered against the title. After this rejection of the registration of the transfer by the Land Titles Office the description in the transfer was amended, probably in the defendant's office and before July 9th, 1946, by adding the words "reserving unto His Majesty all mines and minerals" and on the 9th of July the transfer was sent by the defendant to the defendant's agent to be delivered to the plaintiff on payment of the full consideration, with the suggestion that, if the plaintiffs were agreeable the transfer be returned to the defendant to be delivered with a duplicate certificate of title to the Land Titles Office for registration, this for the convenience of the purchasers. In the transfer as registered the words "unto His Majesty" were struck out. No one initialled this change and the court found it impossible to say on what date it had been made. On August 21, 1946, the defendant received from the Land Titles Office a duplicate certificate of title in favor of the plaintiff which reserved thereout all mines and minerals and also all coal. On the following day the defendant received from the Land Titles Office a duplicate certificate of title in its name to the mines and minerals except coal. In other words, at the time the plaintiffs (the purchasers) brought this action the defendants were the registered owners of the mines and minerals other than coal. The certificate of title to the plaintiffs was received by one of them in 1947 by mail. On seeing that it covered the proper section he put it in a safety deposit box. In 1951 the defendants, as administrator of the estate, gave a ten-year "lease" of the petroleum and gas and related carbons other than coal in the said land to an oil company and the oil company filed a caveat against the defendant's mineral title to protect the interests under the lease. The plaintiffs now sue for, among other things, a declaration that they, the plaintiffs, are the owners of the mines and minerals, except coal, in and under the said section of land.

The court found that the plaintiffs agreed to buy and the defendants to sell the land in question, except the coal, which to the knowledge of the plaintiff who conducted the negotiations leading up to the said agreement were reserved to the C.P.R.

The court held that by such agreement the plaintiffs acquired the right to receive a good title in fee simple to all that the term land denotes, except coal, and that in this instance and at the time of the agreement the term land included the mines and minerals. The plaintiffs were entitled to have the transfer rectified on the ground of mutual mistake and since as the court found it was a mutual mistake between the plaintiff and the defendant the plaintiffs were entitled to the rectification of the transfer notwithstanding the issuance of the certificate of title to the plaintiffs which left out the mineral rights.

The oil company which had the lease had dealt with the registered owner. The court held the lease valid and that in executing it the defendant was trustee for the plaintiffs. The defendant was ordered to assign the lease to the plaintiffs and to account for any money received under the lease.

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